

A manual of

Kshara Sootra Karma

Prof. Ramesh Chand Arya

Ph.D Shalya Tantra

1st

**Includes both modern
& Ayurveda Procedures**

A Manual of Kshara Sootra Karma

By
Prof. Ramesh Chand Arya
Ph.D. Shalya Tantra
H.O.D.,
P.G. Deptt. of Shalya Tantra

Rajiv Gandhi Govt. Post Graduate Ayurvedic College,
Paprola, Distt. Kangra (H.P.) - 176115

*DEDICATED
TO
MY
STUDENTS*

Forwarding Letter

Dear Dr. Ramesh Arya,
Professor Of Shalya tantra,
Govt. Ayurvedic College Paprola,
Himachal Pradesh.

It has come to my notice that you have written a very useful book " A MANUAL OF KSHARSUTRA KARMA". I am sure that this book will be helpful for Students & also for re-search works in the field of ANO-RECTAL DISEASE.

You have already done so much of work in Ayurved & modern surgery field & this book will be another feather in your cap.

My heartiest congratulations & best wishes for your work.

Prof. Shyam Sunder Sharma (09828590902)
Ex. Professor Deptt. of Shalya tantra
National Institute of Ayurveda Jaipur.

Ex. Principal
S. P. R. Ayurvedic College
Sikar (Rajasthan)

Preface

The spectrum of ANUSHAstra-KSHARAGANI KARMA is rapidly expanding with the introduction of advances in the diagnostic investigations and consequent therapeutic advancements. As a result there is a rapid expansion of the contents in Anushastra -Kshara karma-therapeutics. Unfortunately, no single book covers all the aspects of Kshara-sootra karma. As a result, the students have to go through several books including Samitas within short span of time. The book is the outcome of the author's experience in Kshara Karma therapy for about three decades as a teacher of both undergraduate and postgraduate students for whom this is primarily meant. In this way, the book pretends to be a comprehensive book of Kshara Karma, as parasurgical measures to treat various surgical disorders and this volume would assist its readers in finding a perspective vision in Kshara sootra technique.

So the aim of this manual is to help the students in readily grasping the solution of problems emerging at the time of Kshara sootra application to manage the surgical disorder. As the practical approach has been offered, which makes the book most useful in the form of clinical aid to the students in cultivation of the art of the technique for the purpose of Kshara Karma. Moreover, This book will also be of immense help for the general surgeon as a constant guide in dealing with the Kshara Karma to treat Anal fistula, Sinus etc.

The outline of the book has been designed by myself but, the final hard work pertaining to proof reading & typing etc. was done by my students to whom I am grateful, particularly Dr. Deepshikha.

I am greatly indebted to the colleagues of post graduate department of Shalya Shastra for their sincere help and constant co-operation in the publication of this book.

I express my thanks to Dr. Renu & Dr. Sunil kumar, M.S.(Shalya Tantra), D.A.V. Ayurveda college, Jalandhar, Punjab. for their continuous help and encouragement in bringing out this book.

I admire the patience and the devotion of Sh. Dinesh Katoch Software engineer, who has helped me for typing and retyping the manuscript over and over again, never with a grudge and always with a smile. My thanks are also due to the publisher for his co-operation.

With the best of my intention I have tried to avoid plagiarism but this unavoidable rhetoric has got interwoven in the matrix of the content of text. So, In spite of the best efforts of the Author and the Publishers there may be some mistakes in the text for which I owe an apology to my colleagues and students.

Despite best efforts, some errors might have crept in. so constructive criticism and valuable suggestions for the improvement of the book will be most welcome. I shall deem my labor amply rewarded if this book is appreciated by the readers.

Content

Chapter 1.	Introduction to Kshara Karma	1 - 10
Chapter 2.	Introduction to Kshara Sootra	11 - 31
Chapter 3.	Anatomy of Guda	32 - 42
Chapter 4.	Application of Kshara Sootra in Benign growths	43 - 49
Chapter 5.	Application of Kshara Sootra in Haemorrhoids	50 - 66
Chapter 6.	Application of Kshara Sootra in Rectal Prolapse	67 - 83
Chapter 7.	Application of Kshara Sootra In Fissure-In-Ano	84 - 102
Chapter 8.	Application of Kshara Sootra in Abscess and Infected Wound	103 - 119
Chapter 9.	Application of Kshara Sootra in Pilonidal Sinus	120 - 135
Chapter 10.	Application of Kshara Sootra in Fistula-In-Ano	136-160
Chapter 11.	Application of Kshara Sootra in different clinical variants of Fistula-In-Ano	161 -163
Chapter 12.	Diagnosis of Ano Rectal Disorders	164-173
Case Record Form - I	¹³ <i>Stricture in Ano (162 to 167)</i>	174--181
Case Record Form - II		182-191
Index		192-193

CHAPTER - 1

INTRODUCTION TO KSHARA-KARMA

The description of *Kshara* has been mentioned in detail in the *Brihat Samhitas* (i.e. *Charak*, *Sushruta*, *Vagbhata*). *Maharishi Sushruta* has given the appropriate etymology of *Kshara*.

Etymological derivation of *Kshara*

The word *kshara* is derived from two root words *Ksara* or *Ksana*, *Ksara* means to dislodge, to melt away, to kill, to destroy.

The term *Ksharanad* implies to debridement and liquefaction of vitiated tissues in the infected wound.

The term *kshanan* implies to excision by distruction/ devitilazation of tissue.

Pharmacotherapeutic properties of *Kshara**

The *Kshara* not being a single drug entity, but being a composite of many drugs it alleviates the three *doshas*. Being white in colour it is placid, even though it is placid, its strength is not incapable of carrying out cauterization, digestion and splitting and excision of pathological lesions. As it is mainly made up of the drugs having heating, irritant, caustic effect it is pungent in taste, caustic in potency, sharp in properties, digestive and liquefier of the unhealthy granulation tissues; when used externally on infected ulcers it has cleansing, debridement, deodorant, healing, adsorbent, styptic and scrapping in properties; when used internally it is destroyer of worms, *ama dosa*, *Kapha*, skin diseases, poisons and obesity and is also (a suppressor) of sexual potency after prolonged administration.

Fundamental Properties

Colour - White

Potency - Somya

External use

Shodhan (cleansing)

Ropan (healing)

Shoshan (adsorbent)

Skandhan (styptic)

Lekhana (curating, curette)

Internal use

Krimya (wormifuse/helminthicide)

Ama dosa hara

Kapha hara

Kustha hara

Vishaghna

Meda sam Uphanta

Kshara and predominance of *rasas** -

Sr. No.	Acharya	Rasa	Anurasa
1.	Charaka	Katu, Lavana	-
2.	Vagbhata	Katu, Lavana	-
3.	Sushruta	Katu	Lavana
4.	Dalhana	Lavana	Katu

Properties of kshara

Rasa	-	Katu
Veerya	-	Ushna
Vrana	-	Shukla
Guna	-	Somya, tikshna, agneya
Doshagna	-	Tridoshagna
Karma	-	Dahana, pachana, darana, vilayana, shodana, ropana, shoshana.

Good qualities of Kshara** -

- | | |
|-----------------------|-----------------------|
| i. Neither too strong | ii. Neither too mild. |
| iii. White in colour | iv. Fine |
| v. Slimy | vi. Unspreading |
| vii. Soothing | viii. Quick acting |

The Kshara possessing the above mentioned 8 qualities is said to be perfect for executing Kshara karma over various diseases.

Bad qualities of Kshara* -

- | | |
|--------------------------------------------|------------------------------|
| i. Too mild | ii. Too white |
| iii. Too hot | iv. Too sharp |
| v. Too slimy | vi. Too spreading |
| vii. Too thick | viii. Incompletely processed |
| ix. Prepared from drugs of lesser potency. | |

The Kshara possessing one or more of the above mentioned bad qualities will lead to complications following Kshara karma on various diseases.

Classification of Kshara -

- Pratisarniya (external use)
- Paniya (internal use)

In Ashtanga samgraha, Kshara has been classified into two categories

- Bahiya parimarjan
- Antah parimarjan

Indications of Pratisarniya Kshara**

i. Skin disorders-

Kustha (Dermatosis)	Kitibh (Hyperkeratosis)
Tilkalaka (Non elevated mole)	Dadru (Ring worm)
Nyacha (Hyper pigmentation)	Mandala (Circular patches)
Kilasa (leucoderma)	Vyanga (Naevi)
Charmkila (Hypertrophy of papillae and epidermis)	
Mashak (elevated mole)	

ii. Mukha roga -

Upjivha (cystic swelling)	Upkusha (gingivitis)
Adhjivha (ranula/ cystic swelling)	Dantavaidharbha (Gingivitis)
Trividha rohini (Diphtheria)	

iii. Miscellaneous –(Surgical disorders)

Bhagandara (fistula in ano)

Dushtavrana (Indolent ulcer)

Arbuda (Benign neoplasm)

Krimi (larva of insect – flies, maggot infested wound)

Bahiya vidhradhi (external abscess)

Nadi (sinus)

Arsha (haemorrhoids)

Indications of Paniya Kshara

i. Sharkara (Urinary gravel)

iii. Agnisanga (Dyspepsia)

v. Arochaka (Anorexia)

vii. Ashmari (Calculus)

ix. Visha (Poison)

xi. Prostatomegaly (asthila)

xiii. Yakritpliha vridhi –hepato-spleno megaly

xiv. Udar roga (Abdominal disorder)

xv. Abhyantara vidhradi (Internal abscess)

ii. Gulma (Abdominal swelling\lump)

iv. Ajeerna (Indigestion)

vi. Anaha (Abdominal distension)

viii. Krimi (Worms)

x. Arsha (Haemorrhoids)

xii. Mutrakricha (dysuria)

Contraindication of Internal use of Kshara

i. Rogi prakriti (patients nature) –

a. Durbala (debilitated person)

b. Sthavir (old age)

c. Bhiru (apprehensive)

ii. Roga (disease)

a. Sarvangshoon (anasarca, generalised oedema)

b. Prameha (urinary disorder)

c. Raktapitta (haemorrhagic disorder)

d. Kshatsheen (cachexic /chest problem)

e. Garbhini (pregnancy)

f. Trishna (dehydration)

g. Ritumati (mensturation)

h. Murcha (syncope)

i. Pravridhjwarita (hyper pyrexia)

j. Kleev (impotency)

iii. Kaal (time)

a. Sheeta (winter)

b. Ushna (summer)

c. Varsha (rainy)

d. Dur-Dina (Unauspicious day)

e. Pravata (breezy)

iv. Pradesh (Body parts)-

a. Marma (vital)

b. Sira (vein)

c. Snayu (ligament)

d. Sandhi (joint)

e. Tarunasthi (cartilage)

f.	Sevani	(tendons)
g.	Dhamani	(artery)
h.	Gala	(throat)
i.	Nabhi	(umbilicus)
j.	Nakha	(nail)
k.	Srota	(channels)
l.	Anta shepha	(Urethra)
m.	Alpamanshal pradesha	(Less muscular areas)

Method of preparation of Pratisarinya Kshara -

It is of three types

- | | | | | | |
|----|------|-----|----------|------|--------|
| i. | Mild | ii. | Moderate | iii. | Strong |
|----|------|-----|----------|------|--------|

Step I

Collection of plants :-

Having done the customary ritual of consecration, plant is to be collected one day earlier. The plant (black mushkak) which is mature, undamaged, well developed and well grown on a good soil should be uprooted and collected on auspicious day in autumn season.

Step II

Then it should be divided into small pieces, heaped together in a place free from draughts of wind and ignited by sesame (tila) stalks (*Sesamum indicum*) after mixing with pebbles of lime stone. When the fire has burnt out, the ash and slake lime should be collected separately.

Step III

Following the same method the whole plant including roots, fruits, leaves and branches of the following trees should be burnt for preparing pratisaraniya caustics *Kutaja* (*Holarrhena antidysentrica*), *Palasa* (*Butea monosperma*), *Asvakarna* (*Dipterocarpus turbinatus*), *Paribhadra* (*Erythrina variegata*), *Bibhitaka* (*Terminalia bellirica*), *Aragvadh* (*Cassia fistula*), *Tilvaka* (*Gynandropsis gynanodra*), *Arka* (*Calotropis procera*), *Snuhi* (*Euphorbia nerifolia*), *Apamarga* (*Achyranthes aspera*), *Patala* (*Stereospermum Suaveolens*), *Naktmala* (*Pongamia pinnata*), *Vrsa* (*Adhatoda vasica*), *Kadali* (*Erythrina variegata*), *Citraka* (*Plumbago zeylanica*), *Putika* (*Karanj*)(*pongamia pinnata*), *Indravrksha*(*Wrightia tomentosa*), *Sphota* (*Hemidesmus indicus*), *Asvamaraka* (*Nerium indicum*), *Saptacchada* (*Alstonia scholaris*), *Agnimantha* (*Premna mucronata*) and *Gunja* (*Abrus precatorius*) and all the four types of *kosataki*(*Luffa acutangula*) should be burnt. Then one *drona* (12.228 kg) of the ash should be dissolved in six *dronas* (73.368 liters) of water or urine as prescribed dissolving ash are well stirred. The floating mass consisting wood charcoal is skimmed off on the surface, the process of decantation for extracting the ash is repeated many times and filtered twenty one times though watmann fine grade filter paper or with clean cotton cloth and should be treated on fire in a big pan while it is slowly stirred by a ladle. When it becomes clean, red, sharp and slimy, it should be re-filtered through a wide piece of cloth and the filtrate should be placed again on fire after removing the separated residue. This prepared kshara is known as mild or Samvyuhima variety.

However, one and half *kudava* (= 288 ml) of the alkaline water out of the same filtrate should be kept apart prior to place it on fire.

Step IV

Eight pala (384 gram) of Shankh nabhi (conch core) lime stone, Bhasmasarkara,

Katsarkara, Kshirapaka (Jal shukti) should be mixed with remaining alkaline water i.e. two Drona and should be further treated and stirred keeping constant vigilance. It should be so processed that it neither becomes too thick nor too thin. When it has been boiled appropriately it should be taken down from the furnace and should be preserved in a wide iron pitcher with its mouth covered. This is the method of the preparation of moderate variety of Pratisaraniya kshara.

Mineral which are mixed to mridu kshara to make it madhyama kshara

Sr.	Sanskrit name	Source
1.	Bhasma Sarkara ✓	Secreted drops from plant edges during burning became solid form or <u>burnt lime</u>
2.	Kata or Suddha Sarkara	<u>Unburnt</u> , semi burnt pieces of limestone
3.	Sukti (oyster shell)	Oystrea edulis
4.	Shankh nabhi	Calcite (CaCO ₃)

Suddha sarkara (Sudha) –

Kalika churna/burnt lime/caustic lime or calcium oxide. It is an alkaline mineral. In the mineral kingdom, it is found in the form of carbonate, sulphate, phosphate, silicate and flourate. In the vegetable kingdom, it is found in combination of vegetable acids.

It is obtained by calcinations or burning the lime stone etc. It is an antacid, pungent, caustic and slightly soluble in water.

Sukti (Oystrea edulis)

It is commonly known as oyster shell, found in ocean. It contains calcium carbonate 85-90% phosphate and sulphate of calcium and magenesium, oxide of iron, alumina and silica. It has katu rasa and snigdha guna.

Shankh nabhi (CaCO₃)

It is well formed trigonal crystals very common as nodular compact and earthy. Calcite is infusible but becomes highly luminous when heated.

Calcite is the of the most common and most widespread mineral on earth's surface where it is the only stable in form of CaCO₃. It is a principal constituent of sedimentary limestones rock and occurs in carbonate shells in fine precipitates and as clastic materials.

Strong Pratisaraniya kshara :

If the same is mixed with one *Sukti* (24 gm) of the fine powders of Danti (*Baliospermum montanum*), Dravanti (*Croton tiglium*), Citraka (*Plumbago zeylanica*), Langali (*Gloriosa superba*), Putika (*karanja*)(*Pongamia pinnata*), Pravala Talapatri (*Asparagus adscendens*), Vida , Suvarcika , Kanakaskshiri (*Argemone mexicana*), Hingu (*Ferula narthex*), Vacha (*Acorus calamus*) and Ativisa (*Aconitum heterophyllum*) in equal proportions of as many of them as are available, is mixed with kshara solution prepared as a moderate pratisarniya kshara. This is the process of *pakya kshara*, the strong variety of kshara.

Medicinal plants and minerals which is mixed to make Madhyama to Tikshan kshara

Sr. No.	Sanskrit name	Latin name	Family
1.	Danti	<i>Baliospermum montanum</i>	Euphorbiaceae
2.	Dravanti	<i>Crotan tiglium</i>	Eurphobiaceae
3.	Chitraka	<i>Plumbago zeylanica</i>	Plumbaginaceae
4.	Langali	<i>Gloriosa superba</i>	Liliaceae
5.	Hingu	<i>Ferrula narthex</i>	Apiaceae
6.	Vacha	<i>Acorus calamus</i>	Araceae
7.	Sukti	<i>Myrtilus margariferus</i>	Pearl (Oyster)
8.	Pravala	<i>Corallium rubrum</i>	Animal product
9.	Bida lavana	<i>Navasadar</i>	Mineral product
10.	Sauvarchala lavana	<i>Rock salt</i>	Mineral product
11.	Talpatri	<i>Asparagus adscendens</i>	Liliaceae
12.	Kanakaskshiri	<i>Argemone mexicana</i>	Papaveraceae
13.	Putika	<i>Pongamia pinnata</i>	Fabaceae

Application of Pratisarniya Kshara in case of surgical swelling (internal piles) Preoperative arrangement (Poorva karma)

The patients suffering from diseases curable by caustics should be calm and seated in a poorva karma room.

- Firstly patient of ano rectal swelling (internal) is made to go through snehan and swedan karma. Subsequently fatty, hot, small and liquid diet is administered to suppress the pain originating from Vata vridhi and kept in solitude sacred poorva karma room.
- Written and informed consent of patient and attendant is obtained.
- Soap water enema to clean the bowel is given.
- Tetanus prophylaxis

Pradhan Karma

Position of patient

- When the sky is clear, weather neither too hot or too cold. The patient is made to lie on a wooden table with anus facing the light in lithotomy position. A sand bag is placed below the patient's back for elevation.

Digital Rectal Examination (DRE)

- This is the most important examination for valuable information pertaining to specific lesion which must be excluded before kshara karma on anorectal swelling.

Proctoscopy

- A proctoscope lubricated with *jatyadi ghrta* is gently negotiated into the anal canal of the patient, who keeps on straining till its complete insertion. When the proctoscope has been inserted, the obturator is pulled out and rectal swelling is visualised.

1st Step

The internal surgical swelling is gently scraped if required and cleaned with a guaze piece

2nd Step

Pratisarniya Kshara is applied with the help of scoop. 1st on pile mass located on right side preferably located at 7 o' clock position. The *Kshara* is wiped out after counting hundred. Simi-

larly, the pile masses located on other primary positions are to be dealt with the application of Kshara.

If the colour of the swelling matches the colour of *Pakwa jamuna* fruit or appear to be suppressed or regress in size. It implies the *Kshara* has done its work efficiently. Then *Ghrita* mixed with *Mulathi* (*Glycirriza glabra*) powder is applied over the cauterized part of swelling to calm the burning sensation due to *Kshara* application. In case of second sitting the *Kshara* application is performed after interval of seven days.

3rd Step

Neutralization of excess kshara is made if required by the application of kanji (amla), tila (Sesamum indicum), madhu etc.

Post Kshara karma therapy -

- The patients is advised *ushna avgahana* and cold water is sprinkled over the head.
- The patient is advised liquid diet and directed to remain in a place free of breeze.
- Patients is advised to take following drugs

Shigruggul	-	2 Tab TDS
Rasanjanvati	-	2 Tab BDS
Eranda bhrishta haritaki	-	6 -10 gm OD

(As per requirement if constipation occurs.)

Jatyadi ghrita for local application

Signs of Kshara karma therapy :-

Proper Kshara karma therapy

When the *Kshara* has been properly applied the following signs are manifested.

- Suppression of the disease
- Feeling of lightness
- Cessation of discharge

Improper Kshara karma therapy

When the *Kshara* application is inadequate the following features appear

- Pain
- Irritation
- Heaviness
- Aggravation of the disease

Excessive Kshara karma therapy

When there is excessive application of the *Kshara* the following features appear -

Burning sensation	Inflammation
Red colouration	Discharge
Bodyache	Fatigue
Thirst	Fainting
Death	

Importance of Kshara Karma

The *Kshara* are superior to the sharp instruments and their substitutes because of their capability to perform excision, incision and scraping, because of their power to alleviate all the three *Doshas* and moreover as they can be used for some special procedures.

When the *Kshara* is applied in improper way it acts like poison, fire, sharp instrument, lightning and thunder and causes death but when applied properly, the disease get cured definitely.

Chemistry of kshara -

Prof. A.R. Vasudev Murthy describes the chemical composition of kshara in his Indian Tradition of Chemistry and Chemical Technology as follows :-

The wood ashes contain potassium and sodium carbonates (K_2CO_3 and Na_2CO_3) limestone and seashells contain calcium carbonate ($CaCO_3$). On heating strongly carbonate decomposes into calcium oxide (CaO), quick lime and carbon dioxide (CO_2) which escapes into the air. Calcium oxide reacts with water vigorously and gives calcium hydroxide $Ca(OH)_2$, which is limewater indeed. Calcium hydroxide reacts with potassium/sodium carbonate and gives rise to calcium carbonate which comes down as precipitate. Alkali hydroxide (KOH) remains in solution which may be concentrated by boiling to different extents. This essential chemical reaction can be expressed in terms of the following equations.

1. $CaCO_3 \longrightarrow CaO + CO_2$
2. $CaO + H_2O \longrightarrow Ca(OH)_2$
3. $K_2CO_3 + Ca(OH)_2 \longrightarrow 2KOH + CaCO_3$

Standardization of Kshara

The use of plants and herbs for medicinal purposes is as old as mankind. Out of all medicines, 40% today contain one or more active components derived from plants even half the prescription given in Asia as therapeutic drugs are plants derived. In this way, the interest in phytotherapy for a lot of medico surgical problems has been growing steadily throughout the world. In Germany and Austria, phytotherapeutic drugs are used as a first line of treatment for a number of diseases viz-LUTS due to BPH.

Despite the ever increasing global interest in plant and plant based drugs, these have not come at par with the modern drug, the reason being inconstancy of composition of plant based drugs as compared to chemical drugs because of lack of standardization and quality control of plant based formulations.

Standardization problem arises from the complex composition of phytotherapeutic drugs which are used in the form of whole plant, part of plants and of plant extracts. Inconsistency may be due to several factors such as :

- Age and origin
- Stage of harvesting
- Method of drying
- Storage of crude drugs
- Post harvest microbial damage
- Post-harvest control of insect infestation

Standardization of a drug does not include only analytical control but also requires a thorough description of the starting material including basic ingredients. Thus, to ensure therapeutic efficacy of the drug it is necessary to have standardisation in terms of biological, chemical and physico-chemical parameters.

General protocols for the standardization of raw material for plant and plant based formulations include

- Authentication by detailed morphological, taxonomical studies.
- Organoleptic evaluation
- Microscopical examination including quantitative microscopy

- Volatile matter
- Ash value
- Extractive value
- Chromatographic profile
- Quantitative estimation of a marker compounds (s) by various quantitative methods

Different methods used for the standardisation of herbal drugs are spectrophotometry, fluorimetry, polarography, titrimetry, gravimetry and chromatography. The chromatographic methods include TLC (Thin layer Chromatography), HPTLC (High performance thin layer Chromatography) fingerprint profile, HPLC (High Performance layer chromatography), GLC (Gas liquid Chromatography).

Loss on drying at 105°C :

A glass stoppered shallow weighing bottle is weighed after drying it for 30 mins. Accurately weighed amount of test material added to the bottle, covered and accurately weighed with the contents. The loaded bottle is then kept in an oven at 105°C, the stopper is removed and also kept in the oven. After 2 hour the bottle is removed, stopped immediately and kept in a desiccators for cooling and weighed, loss on drying is expressed as % w/w.

Estimation of pH :

Carbon dioxide free water (10 ml) is added to 0.1g test material, the mixture is vortex for 1 min, set aside for 15 min, vortex again for 1 min and centrifuged. The clear supernatant is removed and its pH is measured using a digital pH meter and the mean pH recorded.

Estimation of sodium and potassium content :

Sodium and potassium content are determined by flame photometry. Separate stock solution of sodium/potassium (500 m Eq) is prepared using NaCl and KCl respectively in triple distilled water. Separate working standard solutions containing 0.5, 1.0, 2.0, 4.0 and 5.0 mEq of sodium/potassium are prepared from respective standard stock solutions and flame photometer reading are recorded for these solutions choosing appropriate filters. Separate calibration lots for sodium/ potassium are prepared 0.05g of *Apamarga Kshara* is shaken vigorously with 15ml triple distilled water in 50 gm volumetric flask and volume made upto mark. The solution is filtered and the filtrate is subjected to flame photometry choosing either sodium/potassium content in the test material is recorded.

“तत्र क्षरणात् क्षणनाद्वा क्षारः ।

(Su. Su. 11/4)

“नानौषधिसमवायात् त्रिदोषघ्नः शुक्लत्वात् सौम्यः तस्य सौम्यस्यपि सतो दहनपचनदारणादिशक्तिरविरुद्धा, स खल्वग्नेयौषधिगुणभूयिष्ठत्वात् कटुक उष्णस्तीक्ष्णः पाचनो विलयनः शोधनो रोपणः शोषण स्नाम्भनो लेखनः कृम्यामकफकुष्ठविषमेदसामुपहन्ता पुस्त्वस्य चातिसेवितः ।

(Su. Su. 11/5)

“अम्लवर्जान् रसान् क्षारे सर्वानेव विभावयेत् । कटुकस्तत्र भूयिष्ठो लवणोऽनुरसस्तथा ।

(सु. सू. 11/25)

“नैवातितीक्ष्णो न मृदुः शुक्लः श्लक्ष्णोऽथ पिच्छिलः अविश्यन्दी शिवः शीघ्रः क्षारो ह्यष्टगुणः स्मृतः ॥

(Su. Su. 11/18)

“अतिमार्दवश्चेत्यौष्ण्यतैक्ष्ण्यपैच्छिल्य सर्पिताः । सान्द्रता अपक्वता हीनद्रव्यता दोष उच्यते ॥

(Su. Su. 11/19)

“तत्र प्रतिसारणीयः
कुष्ठकिटिभददुमण्डलकिलासभगन्दराबुदाशौदुष्टव्रणनाडीचर्मकीलतिलकालकन्यच्छयंगमशकबा- ह्यविद्रधिकृमिविषादिषूपदिष्यते ।
च मुखरोगेषूपजिहवाऽधिजिहवोपकुषदन्तवैदर्भेषु तिसृषु च रोहिणीषु एतेष्वेवानुशस्त्रप्रणिधानमुक्तम् ।

पानीयस्तु गरगुल्मोदराग्निसंगाजीर्णारोचकानाहशर्कराशमय्याभ्यन्तरविद्रधिकृमिविषार्शस्सूपयुज्यते ।

अहितस्तु रक्तपित्तज्वरितपित्तप्रकृति बालवृद्धदुर्बलभ्रममदमूर्च्छा तिमिरपरितेभ्योऽन्येभ्यश्चैवविधेभ्यः ।

नादेयी कुटर्जाकशिगुबृहतीस्नुहिबत्व भल्लातक व्याघ्रीकिषुक पारिभद्रकजटाऽपमार्गनीपाग्निकान् ।
वसामुष्कपाटलाः सलवणा दग्ध्वा जले पाचितं हिंवादि प्रतिवापमेत दुदितं गुल्मोदराश्टील्लिशु ।

सितातुल्यो यवक्षारः सर्वकृच्छविनाशनः निदिग्धिकारसोवाऽपि सश्रोत्रः कृच्छनाशनः ।

पाटल्या यावशूकाश्च पारिभद्रात तिलाद्वपि
क्षारोदकेन मदिशं त्वगेलोशनसंयुक्तम् । पिवेद् गुडेन मिश्रान वा लिह्यादेतान् पृथक-पृथक ।

तथा मर्मसिरास्नायुसन्धितरुणास्थिसेवनीधमनीगलनाभिनखान्तःशोफःस्रोतस्स्वल्पमांसेषु च
प्रदेशेष्वक्ष्णोश्च न दद्यादन्यत्र वर्त्मरोगात् ।

तत्र सम्यग्दग्धे विकारोपशमो लाघवमनास्रावश्च हीनदग्धे तोदकण्डुजाडयानि व्याधिवृद्धिश्च ।
अतिदग्धे दाहपाकरागस्रावांगमर्दकलमपिपासामूर्च्छाः स्युर्मरणं वा ।

क्षारदग्धव्रणं तु यथादोषं यथाव्याधि चोपक्रमेत् ।।
अथ नैतेक्षारकृत्याः । तद्यथा

दुर्बलबालस्थाविरभीरुसर्वांगशूनोदारिरक्तपित्तिगभिण्यूतुमतीप्रवृद्धज्वरिप्रमेहिरुक्षक्षतक्षीणतृष्णामूर्च्छोपद्रतक्लीवापवृत्तोदवृत्तफलयो-
(सु. सू. 11/30)

तत्र क्षारसाध्यव्याधिव्याधितमुपवेष्टु निवातातपे देशेऽसम्बाधेग्रोपहरणीयोक्तेन विधानेनोपसम्भृतसम्भारं ततोऽस्य तमवकाशं निरीक्ष्यावधृश्या-
प्रच्छयित्वा शलाकया क्षारं प्रतिसारयेत् दत्त्वावाकशतमात्रमुपेक्षेत ।

तस्मिन्निपतिते व्याधौ कृष्णता दग्धलक्षणम् तत्राम्लवर्गः शमेनः सर्पिमधुकसंयुतः ।
अम्लकाजिकबीजानि तिलान् मधुकमेव च । प्रपेश्य समभागानि तेनैनमनुलेपयेत्
तिलकल्कः समधुको घृताक्तो व्रणरोपणः ।

‘तत्र सम्यग्दग्धे विकारोपशमो लाघवमनास्रावश्च । हीनदग्धे तोदकण्डुजाडयानि व्याधिवृद्धिश्च ।

(सु. सू. 11/)

CHAPTER 2

INTRODUCTION TO KSHARA SOOTRA

Kshara sootra is a well known and more acclaimed medicated surgical ligature used to manage the various surgical disorders especially in diseases occurring in ano-rectal ~~region~~ *region*.

Historical background of Kshara Sootra -

Kshara sootra karma is a minimal invasive parasurgical measure capable of performing excision or chedana; by virtue of its mechanical pressure and phytochemical cauterization. Basically it is an encircling surgical ligature which has been medicated by using Kshara. The word Kshara Sootra implies that Kshara as the main ingredient so, it is very fascinating to note that Kshara must be present as one of the ingredients of Kshara sootra when it is being prepared for surgical use.

Acharya Sushruta has advised its use and method of application in Nadi vrana, Arbuda and Bhagandara. Although he has described the preparation of Kshara in detail and application of Kshara Sootra in the management of Nadi Vrana. Acharya Charaka also indicated its application in Bhagandara in the chapter of sotha treatment. But remained silent on its method of preparation.

Acharya Vagbhatta also followed Sushruta's method of application of Kshara sootra. So it is worthy to mention that application of Kshara Sootra has been well documented in Brihatrayee. Surprisingly, they remained silent regarding the process of preparation of Kshara sootra. So for as literature of Laghutrayee is concerned, only Bhavaprakash has mentioned the use and method of application of Kshara Sootra similar to that of Sushruta.

Thereafter in the text related to Ras aushadi chikitsa, there has been description of various types of Sootras (surgical ligatures) which have been medicated by using different drugs such as Snuhi, Haridra Jyotosmati etc. But Kshara was never an ingredient of its preparation that is why literary, they cannot be named as Kshara Sootra. But only in Ras Kamdhenu (17th Cen. A.D.), where the author describes the use of Kshara as one of the important ingredient in the preparation of medicated ligature.

Even author of Rastarangani (19th Cen. A.D.) has not mentioned the use of Kshara in the preparation of medicated ligature as he advocated use of medicated ligature.

Dr. Prof. P.J. Deshpandey et.al from Banaras Hindu University has worked in all respects of Kshara Sootra in a scientific manner. Further, the work in this regard was carried out in various institutes of AYUSH all over the India and even in foreign countries like Japan. Moreover the different type of Kshara Sootra have been designed at various institutes for use in the application of various surgical problems namely haemorrhoids, fistula-in-ano etc.

In nutshell, Kshara Sootra was first quoted by Sushruta in the context of the nadivrana the sinus (500-1000 BC), in the chapter of Nadivarana. Then Vagbhatta (100 AD) described as a peeta sootra indicates it's color as yellow, attributed to the turmeric powder used in the preparation. Later Chakradutta in the 11th Century indicated the Kshara Sootra prepared from haridra and Snuhi ksheera. Then Sodharamalla in his work Gada Nigraha, Vidyachintamani and Bhasavarajeeyam have also given its due place to the Kshara Sootra.

Research and Development on Different types of Kshara Sootra

1. ICMR Studies -
Randomised, double blind and multicentric trial at PGI, AIIMS, JIPMER and Madras Medical College, validated the studies and proved superiority of Kshara sootra technique over the conventional surgery.
2. Standardisation of Kshara Sootra at multi CSIR centres (CDRI and RRLO, Jammu).
3. BHU - Studies on different types of Kshara Sutra

- Standard Apamarga Kshara Sootra	1968
- Udumber Kshara Sootra	1984
- Papaya Kshara Sootra	1984
- Snuhi Kshara Sootra	1986
- Yava Kshara Sootra	1990
- Ghritakumari Kshara Sootra	1993
- Tankan Kshara Sootra	1995
- Tikshna Kshara Sootra	1995
- Aragvadhadi Kshara Sootra	1996
- Guggulu Kshara Sootra	1999

Following is the sequel events which indicate the stage wise development of the Kshara Sootra

- K.R. Sharma	1968	Standard Apamarga Kshara
- I.V.P. Rao	1976	Recurrent rate
- Arjun Tripathi	1976	Rectal Fistulae
- B.S. Malhotra	1980	Multiple Fistulae
- A.K. Singh	1983	Bacteriological Study
- Dhanvantari	1984	High Anal Fistula
- M.K. Jalan	1984	Udumbara Kshara Sootra
- O.P. Singh	1986	Papaya Kshara Sootra
- A.K. Gupta	1986	Snuhi Swarasa Kshara Sootra
- Subba Reddy	1990	Extract of Ghrita Kumari
- Narsingh Rao	1990	Snuhiksheera Extract
- R.K. Singh	1990	Tankanshara
- Demanth	1992	Comparative Study
- ICMR	1992	Comparative Study
- Dattatreya Rao	1998	Hisological & Histochemical Studies

Analytical and developmental studies of the Kshara Sootra

Gewali 1990

CDRI Lucknow 1994

- 4 Tri terponoids euphol
- 2 Di- Terponoids
- 3- Curcumonoids
- Physico Chemical Parameters (Hand et. al.)

In Japan, the Toyama Medical University, the study team of woakn yaku in the traditional Japanes medicine department, have studies the analytical aspects of the Kshara Sootra and reported it is having the following formulas.

- Eupho

Triterpene

- Curcumin

Diferuloylmethane

Ingredients -

- Barbour's surgical linen thread 20G
- Latex of *Euphorbia nerifolia* (snuhi ksheera)
- Caustic powder of *Achyranthes aspera* (apamarga kshara)
- Powder of *Curcuma longa* (haridra).

Equipments

- Tensiometer
- pH meter
- Oven
- Glass tubes
- Silica bag
- Incubator
- Kshara sootra cabinet
- Kshara Sootra hanger
- Petry dish
- UV Light source
- Glass tube
- Sterile gauge pieces
- Petromax blower flame

Thread :-

The principle in the selection of the linen thread for the preparation of Kshara Sootra is that it should be acceptable, should not cause contact reaction and when it is used for tight tying it should be in good tensile strength and should not tear. The thread should have the capacity of retaining the coating of the application of medicaments. Thus, surgical barbour's linen thread size 20 G, has been found to be the best one after the other studies with regard to the thread. It has sufficient tensile strength and thickness and does not produce any local reaction when used. The other threads like silk, nylon etc were not of much use since they do not retain the coatings of the medicaments.

Latex :

The idea behind the use of latex is that it is sticky in nature and forms a fine coating over the thread. Repeated coatings over the thread are made. This prevents the thread coming in direct contact with the *kshara* which by the alkaline nature hampers the tensile strength of the thread. Total of 11 coatings of the latex are made over the thread, after every coat has been dried properly. This forms a coating of latex over the thread sufficient enough to prevent the direct contact of the *kshara* with the thread.

Collection of Haridra powder

A fine powder of the dried rhizome of *curcuma longa* is collected for the manufacture of Kshar Sootra. Alternatively, the rhizome of *Curcuma longa* is purchased from the market and washed in water and dried. The worm eaten and older curcuma is discarded at the time of collection of Haridra powder. The rhizome of the dried *curcuma longa* are broken in pieces and with the help of electric mixer, its fine powder is prepared. Thereafter, it is filtered in muslin

fine cloth to make ready for the use in preparation of kshara sootra.

The powder of haridra is used in the last three coating of kshara sootra as antiseptic and anti histaminic substance and also prevents the direct contact of Kshara sootra with the atmospheric air that can lessen the potency of Kshara sootra. Since the kshara is excessively hygroscopic which catches the moisture and make it of low potency. Therefore, by the coating of haridra powder, it can be preserved and used for a longer period.

The ready made powder of Haridra from the market has been found containing various dirt and irritating substances and its use in preparing the Kshara Sootra make it unsuitable and painful to the patients.

Collection of Snuhi Ksheer :

The latex of *snuhi* used for the preparation of kshar sootra, should be collected every day, only 1-2 hours before use. The latex cannot be preserved or stored for a long time. After one hours of its collection, the latex starts separating into a watery portion and a solid gelatinous or resinous portion. The watery portion is of no use. But the solid portion of the left over part of latex can be stored for a day or two in refrigerator in a tight container. This can be used in future by dissolving it in chloroform just before use. But for regular coatings, the fresh latex should be used each time. The best season for the collection of the latex is from the month of October to April. The collection of the latex should be made in clean laboratory glassware and should be corked immediately. It should be collected preferably in the morning hours. The stem of the plant is stabbed with a sharp knife of stainless steel at a suitable site and the latex is collected drop-by-drop in a glass container.

Apamarg kshara:

Kshara is a product prepared by burning the plant and mixing the ash in water and keeping it overnight, after filtration, the water is heated to get a fine white coloured powder. This preparation is referred in all the text books. There are many plants which are assigned for preparation of *kshara*. The studies using different *Kshara* have been conducted and *Achyranthes aspera* is found to have acceptable qualities with regards to the preparation of the thread and management of the disease afore said.

Equipments

Thermaostatic Kshara Sootra cabinet with U.V. light

This is especially devised for preparation of Kshara Sootra. The latest horizontal Kshara Sootra cabinet is adopted by the various departments, few prefers vertical Kshara Sootra cabinets. It has two compartments, side by side, meant to put the Kshara sootra hangers in proper way. It is completely closed cabinet, maintains about 40°C constantly. It is also having the ultraviolet light tube for sterilization of Apamarga Kshara Sootra.

Kshara Sootra Cabinet

It has two chambers

- i. Bigger chamber
- ii. Smaller chamber

The bigger chamber is meant for keeping the Kshara Sootra hangers while smaller chamber containing hot air blowers, fan etc. A thermometer is also fitted which will indicate the temperature inside the cabinet.

The Kshara Sootra cabinet can accommodate as many as 30-50 hangers. Thus, the capacity

ity of a cabinate to manufacture Kshara Sootra is one batch is 900-1500.

Hangers

The Kshara Sootra hangers are the rectangular shaped structures, made up of thick aluminium / wooden strips of about 2 cm in width and 4 cm in thickness. It contains 2 short arms and 2 long arms.

Each hanger has small cuts (notches) on the both sides which are placed at a distance of 2-3 cm from each other. These notches are meant for hooking barbour's linen thread size 20 though out the width and length of the hanger.

There may be variation in the size of the hanger depending on the size of the cabinet. The width of hanger is about 30 cm and each hanger has 15-20 notches on either size. In this way, one hanger can accommodate as many as 30-40 linen threads at a time and Kshara Sootra cabinate can accommodate as many as 30-50 hangers.

Advantages

- To prevent the atmospheric dust particles from sticking over the wet threads.
- It dries the coated threads rapidly.
- To avoid contamination.
- To maintain sterilization through U.V. light.
- It acts as a bactericidal through constant temperature.
- By constant heat and dryness it prevents the hydrophilic activity of the coated medicated

Kshara Sootra

Petry dish

It should be autoclaved and is used for storage of Apamarga kshara, Snuhi ksheer and Haridra during their application over the thread. The petry dish is cleaned and autoclaved after each application.

Glass tubes

They are used for packing of the prepared kshara sootras. The glass tubes are autoclaved. The sterile kshara sootra from the hanger are picked by using gloved hands and kept inside sterile glass tubes with just one fold of the kshara sootra. Glass tubes are then sealed with the help of petromex blower.

Technique of preparation

- Surgical linen thread size 20G is tied to one end of the hanger and hooked to all the notches till the other end of the hanger is reached where it is tied snugly once again.
- The threads are then smeared in snuhi latex with the help of a clean gauze. All the four sides of the thread, viz. Front, back, above and below, are uniformly smeared. The hanger is then placed in the Cabinet. The cabinet is closed properly and threads are kept dry with the help of two 200 watts bulbs and/or hot air blower. The same process is repeated eleven times. After each coating U-V exposure is given to the threads for 20-30 minutes daily.
- The twelfth coating is done by first smearing thread with snuhi latex and then passing the wet linen thread through a heap of finely powdered Aparmarga Kshara. When all the threads are smeared with Kshara, the hanger is gently shaken so that the excess Kshara particles fell down. The hanger is now replaced in the cabinet for drying and for U-V light exposure. This process is repeated till seven coating of Snuhi and Apamarga Kshara are achieved.



Hangers



Kshara sootra Cabinet

The remaining three coatings are finally completed with Snuhi and fine powder of turmeric. Snuhi latex is applied gently and uniformly over the threads and then the wet threads are passed through a heap of fine turmeric powder. After each coating the threads are dried in the cabinet and given U-V light exposure for 30 minutes.

Thus, twenty one coatings over the threads are completed. The order of coatings can be summarized as follows :-

1.	Snuhi latex	=	11
2.	Snuhi latex + Apamarga kshara (alternately)	=	7 each
3.	Snuhi latex + Haridra powder (alternately)	=	3 each
4.	Total coatings	=	<u>21</u>

MEASUREMENT OF THICKNESS OF THREAD AFTER COATING

Thereafter, completed Kshara Sootras are checked for thickness with the help of Micrometer Screw Gauge. The threads should have more or less uniform thickness, varying between 2.10 ± 0.11 mm.

Packing of Kshara Sootra

After this, each thread measuring 11-12 inches is cut away at the two ends overlying the wooden/Aluminium strip and the threads are packed and sealed in oven dried sterile glass tubes. Packed threads are once again given U-V light exposure for 30 minutes. The whole process was done with gloved hands.

In order to perform the process of the sealing of the prepared Kshar Sootra, the whole process is to be done with gloved hands and the removed Kshara Sootra from the hanger should be folded in centre. Only one fold of Kshara Sootra is enough. Many folds should be avoided lest the coating may be stripped off from the prepared Kshara Sootra. The Kshara Sootra is then kept in a polythene bag of appropriate size which is then gently sealed. This is again put inside of good quality of glass tube which should again be sealed on a petromax blower flame. The process of sealing is very delicate and so it should be carried out with utmost care, lest the glass tube might crack or a hole of glass tube may remain unsealed. It is better to put a small silica bag inside the tube before sealing so that whatever the moisture is left inside the tube, will be absorbed by the silica. The sealed tubes containing Kshara Sootra should again be kept inside the cabinet for the exposure of ultra violet radiation. Thereafter, the sterilized Kshara sootra tubes are stored in a separate cabinet or incubator and has to be broken only at the time of its use in an operation theater.

Method of labelling

Following details were mentioned on the label put on each thread :

1. Name
2. Date of manufacturing
3. pH
4. Batch Number

pH Of different drugs in *Apamarga Kshara Sootra*

Sr. No.	Drugs	pH
1.	<i>Snuhi</i>	5.6
2.	<i>Apamarga</i>	10.2
3.	<i>Haridra</i>	6.2

MECHANISM OF ACTION OF KSHARA SOOTRA

The Kshara Sootra as medicated encircling ligature, is made up of latex, alkali powder and haridra powder coated in surgical linen size-20G in definite order. The latex as coated firstly 11 times, produces debridement of the tissues by the way of proteolytic enzymes present in the latex which act in acidic media only. But here, it is worth to note that the moment Kshara is added to it, the proteolytic action immediately ceases since, kshar is highly alkaline (pH 9-11) and latex acid in nature (pH 5-6). Being alkali in nature, the kshara produces the debridement of the wound by the way of its hygroscopic and caustic nature.

The ligature, kshara sootra also described as 'Ksharkatm sutram' and 'Ksharapatram sutram' is highly alkaline by its property so, it overshadow the action of the latex except its sticking and binding property that remains sustained and when Kshara particles are applied over the surgical linen size-20G which is already soaked in the latex of the Snuhi, a lot of Kshara is taken up by the surgical linen and the resultant action is quick debridement due to high concentration of kshara.

Moreover, it has been reported that turmeric powder impregnated on kshara sootra as third ingredient posses a weak antiseptic and anti histaminic property. In addition the last three coating of turmeric powder will prevent direct contact of kshara with a atmospheric moisture and air and therefore it can be preserved and used for longer time.

The idea to follow the definite order of coating of the 3 ingredients in sequential manner is to preserve the proteolytic action of the latex, the caustic or chemical cauterization action of the kshara and the antiseptic action of the haridra. The initial eleven coating with the latex alone are made on surgical linen 20 so that when kshara coatings are applied over this. The upper few coatings of the latex will only be neutralized by kshara and the inner most coating of the latex will remain protected from the alkaline action of kshara and will preserve the proteolytic action.

In the next seven coating of the latex and kshara, under taken by the method of smearing the latex is used as a vehicle or binding material to the particles of kshara since the proteolytic action of the latex ceases by neutralization after the fusion of the latex and kshara particles. By these seven coatings are sufficient to have an adequate concentration of kshara for an effective chemical cauterization action. The remaining final three coatings of the latex and turmeric powder are given to preserve the potency of kshara as well as antiseptic action. Since the kshara is very hygroscopic.

- Mechanical pressure over the pedicle causes occlusion of the supplying blood vessels subsequently necrosis of the body of any swelling.
- Latex of Snuhi (Euphorbia) - Proteolytic, therefore dissolves the tissue at the base of swelling.
- Apamarga kshara being alkali in nature debrides the base of the swelling.
- Haridra Powder-Anti-allergic, antiseptic, wound healer.
- Special linen thread holds the medicine with the help of latex for 3-4 days after application of Kshara Sootra.

Chemical composition in medicated thread known as kshara sootra

Apamarga (Achyranthes aspera)	Snuhi (Euphorbia antiquorum) Latex	Haridra (Curcuma domestica) Powder
Achiruanthin KCL		
Steroids (B- sitosterol)		
(sligmasterol-glucosides)	Euphol	curcumin
Inokosteron	triterpene euphorbol	turmerone
Ecdysterone	cycloartenol	dihydroturmerone
Alkaloids	cycloartenol	zingiberen
	antiquol A& O	phellandrene
	Diterpene	cincol, starch,
Pentosan, potassium, oxalate		
ASH	Chemical irritant	Antibacterial
K ₂ CO ₃		Antifungal
KCL	Smooth cutting	Antiinflammatory
Achyranthin		Antioxidant
KOH		Anticoagulatory
Steroids		Antihepatotoxic
Caustic action		
lysis of tissue		

Indications of Kshara sootra

- ✓ Fistula in ano
- ✓ Haemorrhoids
- ✓ Chronic fissure in ano with fissure abscess.
- ✓ Pilonidal sinus
- ✓ Benign neoplastic pedunculated swelling.
- ✓ Chronic sinuses
- ✓ Corn
- ✓ Rectal polyps and papillomas
- ✓ Warts

Contraindications of kshara sootra

a) Definite contraindications :

- ✓ Osteomyelitis of pelvic bones
- ✓ Osteomyelitis of femur
- Tuberculosis of hip joint
- Tuberculosis of spine
- Intra-abdominal cold abscess
- Chronic/acute cold abscess
- Regional ileitis
- Pelvic abscess

- Intestinal and pelvic malignancies
- Venereal disease
- Strictures of urethra causing urethral sinuses
- Crohn's disease

b) Associated conditions

These are the fistulae where *Kshara sootra* can be applied but the treatment for the systemic conditions should also be instituted. These are :

- Tuberculosis
- Diabetes Mellitus
- Hypertension
- Ischaemic Heart Disease
- Neuropathic conditions e.g. paraplegia etc.
- Chronic amoebiasis
- Benign Prostatic Hypertrophy
- Anaemia
- Uraemia and C.RF
- Urinary Tract Infections.

Advantages of *Kshara sootra* therapy

- Simple, safe and sure treatment
- *Kshara sootra* is chemical fistulectomy rather than surgical fistulectomy
- It is simple minimum invasive surgical technique.
- Performed in Minor O.T. conditions
- Minimum investigations required
- No hospitalization required, it is an ambulatory procedure.
- Only local/topical/Block anesthesia required
- No antibiotic coverage. If required, only after culture and antibiogram.
- *Kshara sootra* is also used in patients who are otherwise not fit for surgery e.g. diabetic patients, hypertensives.
- Cost effective – low cost
- Minimum scar formation at the wound site

Standardization of *Kshara Sootra*

Introduction

Kshara sootra has been used for many centuries, the product has not yet been fully standardized. With a few to lay down standards for identity and quality control of the individual constituents as well as the finished products, standardization is the necessity.

Standardization of *kshara sootra* is complicated as it is a device which contain inorganic as well as organic constituents.

The individual ingredients of *Kshara Sootra*

1. Fresh latex collected from *Euphorbia nerifolia*.
2. A fine powder of the dried rhizomes of *curcuma longa* (haridra powder)
3. A specially prepared alkaline powder derived from the plant *Achyranthes aspera*.
4. Surgical linean cotton thread diameter 0.521 mm, length about 31 ± 1.5 cm, tensile strength

6 and 7 kg measured by pulley and weight method.

Analytical investigation

1. *Analysis of curcuma longa powder* :- the following points are taken for the study :

The haridra powder (turmeric) should comply I.P. 66 specifications for microscopical description, identification, organic matter, ash, alcohol soluble extractive.

Curcumin content 200 mg of the alcoholic soluble extract is dissolved in ethanol (10 ml). 20 μ l of this solution is loaded over one part of the TLC plate (E. Merck Silica gel 20 x 20 cm F254, thickness 0.25 mm divided into three equal parts). The other part of the plate is loaded with 50 mg of standard curcumin leaving the third part as blank. The plate is developed in chloroform : methanol 49:1 and visualized under U.V. The corresponding zones containing curcumin and blank are marked, scooped out and extracted with methanol (3 x 5 ml). The methanolic solution is concentrated and made 10 ml with methanol in each case and O.D. recorded against the blank at 418 nm. The content of curcumin in the powder is then calculated by the following formula :

% content of curcumin powder =

$$\frac{\text{OD of test solution}}{\text{OD of standard solution}} \times \frac{25 \times \text{percentage of total alcoholic extract}}{\text{Wt. of alcoholic extract used for the estimation (in mg)}}$$

where OD is optic density.

The results are reported in table 1.

2. *Analysis of the batches of Euphorbia nerifolia latex.*

- Description – Fresh latex is a milky white sticky liquid which coagulates on keeping.
- Solubility – Partially soluble in alcohol, chloroform, ethyl acetate, methanol and sparingly soluble in water.
- Loss on drying – latex were taken up for loss on drying determination and it varied from 63 to 83 per cent when dried to constant weight at 105°C.
- Estimation of triterpene marker in the latex 20 mg of the latex is dissolved in chloroform and loaded over one part of the TLC plate (E. Merck silica gel 20 x 20 cm F₂₅₄, thickness 0.25 mm, divided into three equal zones). The other part of the plate is loaded with 210 μ g of the standard triterpene marker (the major constituents of CHCl₃ soluble extractive of latex) leaving the third part blank. The plate is developed in chloroform : hexane 3 : 2 dried and visualized in iodine. The triterpene marker zones and blank are marked, iodine evaporated off on a water bath. The marked zones are scooped out, extracted with chloroform : methanol (1:1) mixture and concentrated under reduced pressure to dryness in each case. The dried mass from test solution is diluted with chloroform to 25 ml and one ml of this is taken and concentrated under reduced pressure to get test solution concentrate. Acetic anhydride (4 ml) is added in the dried mass obtained as above from the standard solution and test solution concentrate, cooled below 10°C in ice and 1 ml of conc. H₂SO₄ is added drop wise keeping the temperature below 10°C. A pink colour is first obtained which immediately changed to a light brown colour. After 5 minutes the solutions are brought to room temperature and left for further 20 minutes, the OD of each solution is measured at 276 nm and content of triterpene marker in the sample is calculated. The results are reported in table II.

3. *Analysis of samples of Achyranthes aspera kshara*
 Specially prepared alkaline powder from the dried plant *Achyranthes aspera*.
- Description - White hygroscopic powder.
 - Solubility- Soluble in water (1g dissolved in 5 ml of water forms a clear solution)
 - Identification
 - Gives effervescence with dilute mineral acid.
 - Gives flame test for potassium ion.
 - Gives tests for SO_4^{2-} and Cl^- ions.
 - Loss on drying
 The batches of Kshara are taken up for loss on drying determination and it is found to vary from 0.8 to 10.0% when dried to constant weight at 105°C .
 - Estimation of Alkalinity of Kshara -
 Kshara (100 mg) is dissolved in distilled water (5 ml). Methyl red indicator (2 drops) is added in the solution and it is then titrated with N/25 HCl. The results are given in Table III.

4. *Analysis of Kshara sootra*

In four batches (5 sample each) the following points are taken up for the further study

- Description - Reddish brown coated thread.
- Length 31 ± 1.5 cm tensile strength 4.5 kg.
- Wt/cm - varies from 20 mg to 40 mg.
- Loss of drying - Different batches of Kshara Sootra are taken up for loss on drying determination and it varied from 2.3 to 14.0% (w/w) when dried to constant weight at 105°C .
- Ash - Ash is determined in the 5 batches as per method prescribed in Indian Pharmacopoeia 1966, appendix XXI, p 650. It is found to be between 46 - 58% w/w
- pH - the pH of 1% aqueous extract of Kshara Sootra varied from 9 - 9.3
- Alkalinity (N/25 HCl consumed) - 5 cm long thread is triturated with 5 ml of water. Methyl red indicator (2 drops) is added and the solution is titrated with N/25 HCl. The results are given in Table IV.
- Estimation of Curcumin in the Kshara Sootra - Kshara Sootra (5 cm length) was weighed and treated with 0.2 ml concentration hydrochloric acid. After 10 minutes the mixture is extracted with acetone (3x5 ml). The acetone layer is separated and concentrated under vacuum. The method is repeated as described under the heading curcumin content. The content of curcumin in the Kshara Sootra is then calculated by the following formula :

% content of curcumin in Kshara sootra =

$$\frac{\text{OD of test solution}}{\text{OD of standard solution}} \times \frac{0.005}{\text{Wt. of 5 cm long Kshara Sootra (g)}}$$

- Estimation of triterpene (marker) in the Kshara Sootra - Kshara Sootra (5 cm length) is weighed and extracted with hot mixture of chloroform : methanol, 3: 2 (4 x5 ml). The organic layer is separated and carefully concentrated to dryness, redissolved in CHCl_3 - CH_3OH mixture (0.5 to 1 ml) and the method is repeated as described under the heading estimation of triterpene marker in the latex (by loading 700 mcg of standard triterpene marker and diluting the extractive of standard and test solution zones to 10 ml). The

percentage of triterpene marker is calculated in Kshara Sotra.
The result with batch variation of the Kshara Sootra are given in Table IV

Table I
Analysis report of Haridra used in different batches of Kshara Sootra

Batch No.	Identification (behaviour with acid and alkali IP)	Ash (% w/w)	Hexane soluble extractive (% w/w)	Total alcohol soluble extractive (% w/w)	Curcumin content (% w/w)
A	Positive	7.3	1.08	5.94	1.00
B	Positive	7.6	1.31	6.23	1.44
C	Positive	9.46	1.44	6.5	1.82
D	Positive	7.90	2.26	9.96	3.92

Table II
Analysis report of Latex used in different batches of Kshara Sootra

Batch No.	Solubility	Loss of drying at 105°C (%w/w)	Triterpene (Marker content on dried basis (% w/w))
A	Partially soluble in alcohol, chloroform and sparingly soluble in water	77.5	16.53
B	Partially soluble in alcohol, chloroform and sparingly soluble in water	63.64	10.13
C	Partially soluble in alcohol, chloroform and sparingly soluble in water	69.04	10.41
D	Partially soluble in alcohol, chloroform and sparingly soluble in water	82.8	5.37

Table III
Analysis report of Kshara used in different batches of Kshara Sutra

Batch No.	Description	Solubility	Loss on drying at 105°C % (w/w)	Identification	Alkalinity N/25 HCL Consumed by 100 mg of Kshara (ml)
A	White, hygroscopic Powder	Highly soluble in water, 1g dissolve in 5 ml of water,	9.57	- Gives effervescence with dil. mineral acid - Gives tests for Na ⁺ & K ⁺	23.45
B	-Do-	-Do-	7.4	-Do-	22.05
C	-Do-	-Do-	Negilible	-Do-	23.28
D	-Do-	-Do-	0.82	-Do-	25.72

Table IV
Analysis of Kshara Sootra

Batch No.	Sl. No	Color	Length (Cm)	Wt/cm (gm)	Tensile strength	Loss on drying at 105°C (%w/w)	Ash % (w/w)	pH	N/25 HCL (ml) consumed by 5cm Kshara sootra	% curcumin in the sutra	% w/w/ of triterpene in the Kshara sootra
A	1	Reddish brown	31.0	0.023	4.5 kg	5.8	50.32	9.0	14.5	0.0073	0.332
	2	Do	31.5	0.029	"	3.8	53.67	9.0	18.38	3.0043	0.598
	3	Do	32.5	0.026		13.9	47.91	9.1	14.75	0.0097	0.678
	4	Do	32.0	0.020		9.1	54.53	9.2	12.0	0.0094	0.690
	5	Do	31.5	0.035		8.4	52.59	9.0	25.5	0.0086	0.844
B	1	Do	31.5	0.027		11.7	50.2	9.3	7.29	0.004	1.209
	2	Do	32.0	0.033		7.1	54.5	9.3	11.02	0.014	0.727
	3	Do	31.0	0.028		6.8	57.9	9.1	15.54	0.014	0.316
	4	Do	31.0	0.027		6.5	56.8	9.0	14.06	0.014	0.390
	5	Do	32.5	0.022		9.6	53.4	9.3	9.29	0.012	0.422
C	1	Do	31.5	0.035		4.7	50.3	9.0	21.88	0.001	0.408
	2	Do	31.0	0.027		8.3	46.5	9.0	26.88	0.0017	0.484
	3	Do	31.8	0.026		8.2	46.2	9.2	23.5	0.005	0.227
	4	Do	32.0	0.031		7.9	48.2	9.0	9.98	0.002	0.192
	5	Do	32.0	0.030		2.3	51.5	9.0	20.75	0.0028	0.362
D	1	Do	30.5	0.031		8.2	57.8	9.2	15.54	0.009	1.29
	2	Do	30.3	0.040		3.7	55.7	9.2	20.8	0.013	1.22
	3	Do	30.3	3.029		3.3	56.6	9.2	29.35	0.021	1.21
	4	Do	30.5	0.040		6.8	56.4	9.2	21.7	0.004	1.04
	5	Do	30.3	0.037		3.13	53.2	9.2	30.64	0.035	1.20

Based on the analysis of samples of kshara sootra the following specifications are suggested in nutshell :-

Thread	-	Cotton thread, diameter 0.5 mm with tensile strength 6.7 kg
Colour	-	Reddish brown
Length	-	30 cm \pm 1 cm
Wt/ cm	-	0.035 g \pm 0.005 g
Ash	-	56% \pm 2%
pH	-	9.2
N/25 HCl consumed by 5 cm long thread	-	25 \pm 2.5 ml
% curcumin	-	0.02 % \pm 0.005 %
% latex	-	1.2 % \pm 0.2%

Different forms of Kshara Sootra

Guggulu based Apamarga Haridra Kshara Sootra

After the extensive research work, guggulu based apamarga haridra kshara sootra is developed.

Ingredients -

Barbour linen thread size 20G

- Guggulu niryas (*Commiphora mukul*, *Burseraceae*)
- Apamarga kshara (*Achyranthus aspera*, *Amaranthaceae*)
- Haridra churna (*Curcuma longa*, *Zingiberaceae*)

Order of coating

1.	Guggulu solution	11
2.	Guggulu solution and Kshara	7 each
3.	Guggulu solution and haridra	3 each
Total coating		21

Method of preparation

- i. The purified guggulu is put in a jar filled of absolute alcohol. When it dissolves the solution should be filtered. This solution is used for coating on thread.
- ii. A barbour's linen thread size 20G is taken and initial 11 coatings of guggulu solution is done in an even manner.
- iii. Next 7 coating is done with guggulu solution and apamarga kshara powder. Then it is allowed to dry.
- iv. There after last 3 coating is done with guggulu solution and haridra chruna. Thus 21 coating over surgical linen thread are completed.
- v. This kshara sootra is kept in cabinet with U-V rays exposure for sterilization.

Kutaj Kshara Sootra

Acharya Sushruta has described use of Kutaja as one of the ingredients in preparation of kshara

Ingredients -

- Barbour's linen thread size 20G
- Snuhi ksheer latex (*Euphorbia nerifolia*, *Euphorbiaceae*)

- Kutaja kshara (*Holarrhena antidysenterica*, Apocynaceae)
- Haridra powder (*Curcuma longa*, Zingiberaceae)

Coatings

1.	Snuhi ksheer	11 coating
2.	Snuhi ksheer & Kutaja kshara	7 coatings
3.	Snuhi ksheer and Haridra powder	3 coating
	Total	21

Preparation of kutaja kshara

1. The kutaja (whole drug) is kept with small pieces of lime stones and kept on fire along with dried stems of tila (*Sesamum indicum*)
 2. After complete burning of drug the remaining ash is collected and limestone particles are separated.
 3. The next step followed with addition of clean water in proportions of 1:6 volume of ash and water respectively. This mixture is kept for 24 hours.
 4. The collected ash water mixture is then filtered 21 times through filter cloth to specific coated vessel.
 5. This mixture is kept in mild fire for 24 to 48 hours.
 6. When the mixture becomes clean and clear, it indicates stage of mridu kshara preparation.
 7. After complete evaporation of water, dried white substance is collected, weighed and powdered into fine powder and stored in air tight dry container.
- Thus kutaja kshara preparation is done.

Method of Kshara Sootra preparation

1. A barbour's linen thread size 20G is initially coated with snuhi ksheera for 11 times.
 2. Then with snuhi ksheer and kutaja kshara next 7 coatings are done.
 3. Last coating is done with snuhi ksheera and haridra churna (3 coating).
- Thus kutaja kshara sootra is prepared.

Teekshna Kshara Bhavita sootra

Teekshna kshara sootra is made up of apamarga ksharodaka and barbour's surgical linen size 20G.

Ingredients – Apamarga (*Achyranthes aspera*), Palasha (*Butea monosperma*), Kutaja (*Holarrhena antidysenterica*), Paribhadra (*Erytherina varigata*), Vibhitaka (*Terminalia bellirica*), Aragwad (*Cassia fistula*), Patala (*Sterospermum suavalens*), Karanja (*Pongamia pinnata*), Vasa (*Adhatum vasica*), Chitraka (*Plumbago zeylanica*), Gunja (*Abrus precatorius*), Danti (*Baliospermum montanum*), Dravanti (*Croton tiglium*), Langali (*Gloriosa Superba*), Pravala, Bida lava, Sauvarchala lavan, Hingu (*Ferrula narthex*), Vacha (*Acorus Calamus*), Sukti (*Oystrea edulis*)

Method –

1. Dried panchanga of apamarga plant is burnt with lime stone and other prakshep dravya like palasha, kutaja etc.
2. Collected ashes are mixed with water in one to six ratio of ash with water.
3. It is filtered through a cloth for 21 times in a big vessel.

4. Filtrate then poured in the percolator which is covered with whatman's filter paper allowed it for filtration.
5. This filtrate is taken separately in a big vessel and kept on mandagni (fire) continuously stirred.
6. Powder made from sodhita hingu, pravala, sukti, lavanas and other ingredients are mixed in solution while stirring.
7. After 6-8 hours of this process a thick solution is obtained which is teekshna kshara.
8. Dipping method is applied for the preparation of kshara sootra and total 9 times of the surgical barbour's linen thread is dipped into the teekshna kshara and made dry spontaneously.
9. Then cutting of the thread in 30 cm of length is done and kept in Kshara Sootra cabinet for sterilization and drying.

Palasha Kshara Sootra

Acharya Sushruta, father of surgery has mentioned palasha as one of ingredients of Kshara in the context of preparation of pratisarniya kshara. It has property like krimighna, vranahara, guda rogajith.

Ingredients

1. Palasha kshara - *Butea monosperma*, family - Fabaceae
2. Snuhi ksheera - *Euphorbia nerifolia*, family - Euphorbiaceae
3. Haridra - *Curcuma longa*, Family - Zingiberaceae

Preparation of palasha kshara sootra -

✓ Snuhi	-	11 coatings
✓ Snuhi and palash kshara	-	7 coatings
Snuhi and Haridra	-	3 coatings
Total coatings	-	21

Method -

1. A barbour's linen thread size 20G is taken. Initially 11 coating of latex of snuhi is done in an even manner.
2. Next 7 coatings of palash kshara and snuhi were done. Due to snuhi, kshara particles find firmly on surgical linen thread.
3. Final three coating were achieved with snuhi and haridra powder. The outermost coating of the haridra prevents direct contact of kshara particles with atmospheric air.

After each coating U-V exposure is given to the Kshara sootra for 20-30 minutes in the kshara sootra cabinet.

Arka-haridra Kshara Sootra

Acharya Sushruta has described use of Arka as one of the ingredients in the preparation of kshara.

Ingredients -

Barbour's linen thread size 20G

Arka ksheer (*Calatropis procera*) Asclepideaceae

Arka kshara (Calatropis procera) Asclepideaceae
 Haridra churna (Curcuma longa) Zingiberaceae

Coatings -

Arka ksheera	-	11 coatings
Arka ksheera and arka kshara	-	7 coatings
Arka ksheera and haridra	-	3 coatings

Method

1. Initial 11 coatings of arka ksheera are done on surgical linen thread. Each coating is to be done after drying up the previous coating then keep it in U-V rays for 20-30 minutes.
2. Now 12th coating of arka ksheera and arka kshara is done and similarly 6 more coatings are done. In between after every coating of arka ksheera and kshara U-V rays exposure is given.

3. Last 3 coating of arka ksheera and haridra is done.

So by this method total 21 days are required for complete formation of Arka haridra kshar sootra.

Then keep it in kshara sootra cabinet and U-V rays exposure is given for purpose of sterilization.

Japanese Kshara Sootra (Kanazawa sutra)

By K. Tazawa
 K. Amamoto

Emeritus professor of Toyoma Med. And Pharma. University, Toyoma.
 Fujikosh Hospital, Toyama, Japan 903-0194

Ingredients

1. Red pepper tincture (Capsicum)
2. Latex of fig (Ficus carica)
3. Kshara prepared from whole plant of *Achyranthus gidentata* (family Amaranthaceae)
4. Turmeric powder
5. Suture material - 0.4 mm thickness and 0.0018 gm / cm

Procedure

1. Suture were stretched over a wooden frame (46 cm x 32 cm)
2. Spray of 10% red pepper tincture solution using a sprayer.
3. Then careful coating with fig latex individually.
4. Then adhered with kshara and dried indoor. Then sutures were coated with red pepper tincture and fig latex in same manner.
5. Then turmeric powder was also used and suture were dried.
6. This coatings process was conducted once or twice.

Total number of cases treated

- 1101 of anal fistula
- 23 cases of anal fistula associated with Crohn's disease

Results

- Fistulae tract tied by this kshara sootra was cut through during 1-5 weeks on an average.
- Average length of cutting of tract was about 11-15 mm per week.

Follow up study -

All the cases were examined every month for the first 3 months and every 3rd month thereafter.

Clinical result –

Out of 1101 cases 5.4% - 60/1101 fistulae were subcutaneous and submucous.

76.3% – 840/1101 – fistulae were intersphincteric

17.3% – 191/1101 – transphincteric or high level

0.9% – 10/1101 – extrasphincteric

After over 1 year of follow up

94.6% cases – 1041/1101 – complete cure

5.4% cases – 60/1101 – Recurrence

Complications

In 244 cases

Out of this

- 60 cases pus pocket formation
- 32 cases rest abscess
- 20 cases high level fistula
- 16 cases mild deformity of anus
- 12 cases highly delayed cutting
- 7 cases bleeding
- 6 cases anal incontinence

RASAKAMDHENU KSHARA SOOTRA

In Rasakamdheni Preparation of the kshara sootra has been described in 48th chapter of “Arsharognidan Chikitsadhyay”

Preparation of Kshara sootra –

Preparation of the kshara sootra is done in following manner

1. The Barbour's linen surgical thread size 20G is first smeared with Snuhi ksheer & Arka ksheer, after that it is passed through shodhita bhallataka phalachurna (3 coating is done in following manner)
2. Jyotishmati, Vara (Haritaki, Amalaki, Vibhitak), Danti, Koshataki, Agni(Chitrak), Saindhav lavan churna is mixed properly with ghrit. Then these whole mixture is used for coating over thread(3 coating)
3. After smearing thread with Snuhi ksheer & Arka ksheer thread is passed through mixture of Sauvarchal, Saindhav lavan & Haridra churna (3 coating)
4. After smearing thread with Snuhi ksheer & Arka ksheer thread is passed through Yava kshara. (3 coating)
5. In the last phase, snuhi ksheer & Arka ksheer is smeared over thread, then thread is passed through haridra churna to avoid direct contact of kshar with atmospheric air (1 coating)
6. Thread is allowed to dry in Ksharsootra cabinet after each coating and UV light exposure

S. No.	DRUG NAME	BOTANICAL NAME	FAMILY	PART USED
1.	Snuhi	<i>Euphorbia nerifolia</i> Linn.	Euphorbiaceae	Ksheer
2.	Arka	<i>Calotropis procera</i> Ait.	Asclepiadaceae	Ksheer
3.	Bhallataka	<i>Semecarpus anacardium</i> Linn.	Anacardiaceae	Phalachurna
4.	Jyotishmati	<i>Celastrus panniculatus</i> Willd.	Celastraceae	Beej
5.	Haritaki	<i>Terminalia chebula</i> Retz.	Combretaceae	Phala
6.	Amalaki	<i>Euphorbia officinalis</i> Gaertn	Euphorbiaceae	Phala
7.	Vibhitak	<i>Terminalia bellirica</i> Roxb.	Combretaceae	Phala
8.	Danti Mula	<i>Baliospermum montanum</i>	Euphorbiaceae	Mula
9.	Koshataki	<i>Luffa Acutangula</i> Linn.	Cucurbitaceae	Beej
10.	Chitrak	<i>Plumbago zeylanica</i> Linn.	Plumbaginaceae	Mula
11.	Haridra	<i>Curcuma longa</i> Linn.	Zingiberaceae	Churna
12.	Yava	<i>Hordeum vulgare</i> Linn.	Gramini	Panchang

(Kshar)

S. No.	DRUG	CHEMICAL NAME
1.	Saindhav lavan	Chloride of sodium
2.	Suraj (Sauvarchal)	Potassium nitrate
3.	Ghrit (Goghril)	-

Total no. of coatings -

1.	Snuhi ksheer + Arka ksheer + shodita bhallataka phalachurna	-	3 coating
2.	Jyotishmati, Vara (Haritaki, Amalaki, Vibhitak), Danti, Koshataki, Agni(Chitrak), Sandhav lavan churna + ghrit	-	3 coating
3.	Snuhi ksheer + Arka ksheer + Sauvarchal, Saindhav lavan & Haridra churna	-	3 coating
4.	Snuhi ksheer + Arka ksheer + yava kshar	-	3 coating
5.	Snuhi ksheer + Arka ksheer + haridra churna	-	1 coating
TOTAL NO. OF COATING			- 13 COATING

भावितां रजनीचूर्णं स्नुहीक्षीरैः पुनः पुनः ।
 बन्धनात्सुदृढं सूत्रं छिन्त्यशो भगन्दरम् ।
 सुधादुग्धं वातहरं गुल्मोदरविनाशनम् ।
 बिषाध्मानहरं चैव गुदांकुरहरं परम् ॥
 अर्कस्नुहीतिलाश्वत्थचिंचापापामार्गवहिन्जम् ।
 विलिप्य सप्तधा ह्येव शोषयेद भिषजां वरः ।
 गृहीत्वा भस्म तस्मानु वस्त्रपूतं जलं हरेत् ॥
 प्रलिप्तं सुदृढम् सूत्रं छायायामथ शोषयेत् ।
 अशस्त्रकृत्यामेषण्या भित्त्वाऽन्ते सम्यगेषिताम् ।
 क्षारणीतेन सूत्रेण बहुशो दारयेद्वृत्तिम् ॥

(भा. प्र. खंड 2/ 5/244)

(रसतरंगिणी 744/528)

(र. त. 745/528)

(रसकामधेनु 354)

(अ. द्द. उ. 30/35)

भाविता रजनीचूर्णैः स्नुहीक्षीरे पुनः पुनः ।

बन्धनात् सुदृढं सूत्रं भिनत्त्यर्शो भगन्दरम् ॥

(चक्रदत्त अर्श चिकित्सा / 148)

किम्यस्थिसूक्ष्मक्षणनव्यवायुप्रवाहणान्युत्कटकाश्वपृष्ठैः ।

गुदस्य पार्श्वे पिडका भृष्णार्तिः पक्वाप्रभिन्नातु भगन्दरः स्यात् ॥ (च. चि. 12/96)

एषण्या गतिमन्विश्य क्षारसूत्रानुसारिणीम् ।

सूची निदहयाद्रत्यन्ते तथोन्नम्याषु निर्हरेत् ॥

(सु. चि. 17/30)

सूत्रस्यान्तं समानीय गाढं बन्धं समाचरेत् ।

ततः क्षारबलं वीक्ष्य सूत्रमन्यत् प्रवेशयेत् ।

क्षाराक्तं मतिमान् वैधो यावन्नच्छिद्यते गतिः ।

भगन्दरेऽप्येश विधिः कार्यो वैधेन जानता ॥

(सु. चि. 17/31-32)

स्नुहीर्कनिर्गते क्षीरे भल्लातकसमन्वितैः ।

ज्योतिष्मतीवरादन्तीकोशातक्यग्निसैन्धवैः ॥126॥

चूर्णैरैतैः सधृतैर्गुण्डयेत्सूरजोलवणानि हरिद्रया ।

अर्कस्नुहीपयोलिप्तं पुनः सूत्रं विशोषयेत् ॥127॥

त्रीन्वारां शोषयित्वा तु क्षारेणैव प्रलेपयेत् ।

एतेन बद्धान्यर्शासि पतन्त्यैव न संशयः ॥128॥

(रसकामधेनु 48/126-128)

अथेतरस्त्रिविधो मृदुर्मध्यस्तीक्ष्णश्च । तं चिकीर्षुः शरदि

गिरिसानुजं शुधिरूपोश्च प्रशस्तेऽहनि प्रशस्तदेशजातमनुपहतं मध्यमवयसं महान्तमसितमुष्ककमधिवास्यापरेद्युः

पाटयित्वा खण्डशः प्रकल्यावपाटय निर्वर्तितदेशे निधितिं कृत्वा सुधाशर्कराश्च प्रक्षिप्य तिलनालैरादीपयेत् ।

अथोपशान्तेऽग्नौ तद्भस्म पृथग् गृहीयाद्भस्माशर्कराश्च ॥

(सु. सू. 11/11)

मुष्ककपलाशधवचित्रमदनवृक्षकशिशपावज्रवृक्षास्रिफला चेति ।

(सु. सू. 38/20)

CHAPTER 3

ANATOMY OF GUDA

Guda

The word guda is used by Acharyas to denote an organ that performs the actual functions of defecation. Acharya Sushruta has given detailed description of embryological development of guda with blood supply, musculature and also functioning of guda.

Vyutpatti (etymological derivation of guda) –

The word guda is derived from verbal root 'guda kridayam' to express or to function or from the root Gu-purisotsarg which expresses defecation. (Amarkosha –II).

Word of masculine gender.

"Godate" means to play. 'guda' word at times is used for both i.e. end part of digestive system and end part of urogenital system. Thus the chief site of apana vayu is guda.

Synonyms –

Amarkosha	-	Apanam, payu
Jatadharam	-	Guhyam, Gudavartma
Vijayarakshita	-	Bradhanam
Gangadhara	-	Bradhanam
Vachaspati	-	Vitmarga

Embryological aspect of guda –

According to Sushruta sharira sthana, Antra, basti and guda of the foetus are formed from the cream part of rakta and kapha after being digested by pitta along with active participation of vayu.

It is matrija avayava and produced in the 3rd and 4th month of IU Life.

Anatomy –

Acharya Charaka has mentioned 2 parts of Guda

- i. Uttarguda – where faeces is stored
- ii. Adhara guda – lower part by which faeces is defecated.

Size – 4 ½ angula

Internal structure of guda –

Sushruta has described that the interior of the guda (anorectal canal) contains three valis. They are pravahini, visarjini and samvarani. These are situated one above the other at an interval of 1½ angulas. They are arranged in spiral form (sankavarta nibha) likened to indented indentures in conch shell and resemble the colour of palate of an elephant (gaja talu).

Guda Valis

Sr. No.	Guda Valis	Situation	Co relation
1.	Pravahini	Proximal	Region near to Houston's valve
2.	Visarjini	Middle	Region near to ARR
3.	Samvarani	Distal	Region distal to Dentate line

Vagbhatta has clarified the positions of these valis. He named proximal one is pravahini, the middle one is visarjini and distal one is samvarani. The outer most part Gudosta (anal margin) is situated at an anguli from hairy margin (romanta pradesha) and one angula away or distal to samvarani. Visarjini situated $1\frac{1}{2}$ angula above the samvarani and pravahini located $1\frac{1}{2}$ angula interior to visarjini.

Gudostha -

The measurement starting from the hairy line to gudostha (anal lip) is one and half yava and last vali extends up to the finger above gudostha but valies are counted from within outwards.

In the light of present day knowledge, some scholars translate vali as sphincter (G.D. Singhal et al 1972). But Gananath Sen considered as distal two Houston valves are pravahini and Visarjani respectively and area of external and internal sphincter collectively known as samvarani. Some authors consider lower Houston valve. Columns of morgagni and dentate line are pravahini, visarjini, samvarani, respectively. On the basis of measurement given in classics, distal vali (samvarani) is 2 cm from anal verge, which is the area of ano-rectal ring, external sphincter, anal cushion and terminal part of internal sphincter. This area of samvarani consists of external and internal sphincter which maintains the contents. $1\frac{1}{2}$ anguli above this lies visarjini. The total length from anal verge to visarjini is $2\frac{1}{2}$ anguli i.e. 5cm. Inferior rectal valve corresponds to this level. The inferior rectal wall is considered as visarjini. This area is devoid of peritoneum and internal mucosal membrane rich in stretch sensitive nerve endings. When the column of faecal matter reaches rectum, it stimulates process of defecation. $1\frac{1}{2}$ anguli above the visarjini is the site of pravahini (to compress) so it lies 9 cm proximal to anal verge. It is site of middle rectal valve. Valis are functional and structural and valis are seats of arshas. If the arshas are considered to be originating from vali as arshas are fleshy sprouts in anorectal region, include polyps, papillae, neoplasia etc. occurring in other two proximal valis.

Siras -

According to Acharya Sushruta in koshta region there are 34 vayu carrying siras out of which 8 siras are situated in shroni region connected with linga and guda.

Dhamani -

There are 24 dhamani in the body, out of which 10 go downwards and performs the functions of micturation, defecation, ejaculation of semen, menstruation and expulsion of foetus during delivery.

Asthi -

Visceral organs are well protected by the bony cage of shroni. This shroni comprises of five bones out of them four corners are well attached with guda, yoni and nitamba the remaining one is in the trika region.

Snayu-

There are 60 snayu in pelvic region. Snayu which are connected with guda region are of sushira type.

Relation

It indicates that guda is located closely posterior to the vasti. In the context of anatomy of vasti, Sushruta says that vasti is having closer relation with guda and both are situated in "Gudhasti vivara" (pelvic cavity). It gives an idea that guda is situated in pelvic cavity with relation to vasti (urinary bladder.)

Bladder, prostate, scrotum and anus are inter related, present in pelvic cavity (gudasthi vivara). Sushruta described that Garbhashaya is interfaced between bladder and large intestine. In tantra shareera, the muladhara Chakra is described to be situated between genitalia and anus. Generally Muladhara Chakra is co related with that of pelvic plexus of autonomic nervous system. Out of seven Susrutokta kala, pureeshadhara kala is related to guda. Guda is described as moola of pureeshavaha srotas. It is related to annavaha srotas. It is the direct continuation of distal part of Adhoamashaya. Further it is described that it is attached to the large intestine. Sushruta and Vagbhatta have mentioned that length of the guda is $4\frac{1}{2}$ angulas. The measurement of one angula is approximately 2cm. On the basis of this the total length of the guda is 9 cm. It is well known that maximum length of the anal canal is 3 cm. Thus the extent of guda is anal canal plus the lower 6 cm of rectum which gives roughly as inferior Houston's valve. The total length of ano rectal canal from the anal margin to the recto sigmoid junction is about 16.5 cm out of this; 3 cm is the length of the anal canal. Upper $7\frac{1}{2}$ cm in rectum was included in the large intestine by Sushruta. This $4\frac{1}{2}$ angulas measurements of guda exceeds the anal canal and fall short of recto sigmoid junction. It infers that guda includes anal canal and a part of rectum.

Importance of guda -

i. *Marma* -

Guda is mamsa marma while Vagbhatta include it in Dhamni marma. Similarly Acharya Sushruta has considered guda as udara marma, while Vagbhatta has included it in kostha marma.

Both Acharya consider it as Sadhyapranahara. Injury to it cause obstruction of apanavayu (flatus), mala (faeces) and loss of movement in sthulantra (paralytic ileus) and patient die instantaneously.

ii. *Pranayatana* -

Pranayatan are so enlisted because their proper functioning is very-very important for proper functioning of the body. Guda is one of such pranayatan.

iii. *Srotas* -

Guda is Bahirmukha srotasa. Acharya Charka and Acharya Sushruta has put sthula guda as the root of the purishavaha srotasa.

iv. *Karmendriya* -

Guda is categorized under karmendriya group. Function designated to it is defecation and release of flatus.

Physiological concept of Guda -

Guda is described as one of the panch karmendriyas and its function is to excrete the mala from the body. He also regards the guda and pakwashaya are the seats of apanavayu. The apanavayu helps in expulsion of vata, mutra, purisha, shukra and garbha. In case, this vayu vitiated in the diseases of vasti and guda said to occur. Vitiated apana vata is responsible for causation of diseases like arshas etc.

According to Gananath Sen, the proximal vali i.e. pravahini helps in compressions and pushing the stool downwards, visarjini, the second vali relaxes during this process and allow stool to pass further down. The distal most vali, samvarani, which expels the stool out and constricts immediately, so that the continuity of the cutout and falls down. Thus all these three valis and apana vayu are solely responsible for the mechanism of defecation.

Goligher and Hughes (1951) conducted an experiment and concluded that section of sacral plexus result in complete loss of reflexes for defecation and micturation. In contrast of section of spinal cord at higher level failed to produce that effect, hence apana vayu can be taken as sacral plexus. As already discussed guda does the function of both storing the excreta (uttara guda) and disposing the excreta (adhara guda). Three valis present in it are playing key role in this mechanism. Pravahani compresses and pushes down the stool as spiral movement of Houston valve, visarjini initiates defecation and samavarani does the function of closing the passage of faeces and flatus. In ayurveda basti karma is advocated as a chief treatment for pacification of vata as lower segment of rectum in absorptive in nature.

Anatomy of Anal Canal

Dual embryogenic origin of anal canal –

The anal canal is derived embryonically from two sources. The region above the anal valves arises from the endodermally lined cloaca, whilst below this boundary it comes from the proctodeum, covered with ectoderm.

The cloacal part (above) is innervated by autonomic nerves : the arterial supply is mainly from the superior and middle rectal arteries, while the venous drainage is to the superior rectal vein, a tributary (via the inferior mesenteric vein) of the portal venous system. The lymphatics drain with those of the rectum.

The proctodeal part (below) is covered mainly by skin, and is hence innervated by spinal nerves and its vasculature is also that of the body wall, namely the inferior rectal artery and vein branches and tributaries of respectively, internal pudendal artery and vein. Likewise, the lymphatic drainage of this region forms that of peri anal skin and passes to superficial inguinal lymph nodes.

The anal canal is the terminal portion of the intestinal tract, it begins at the ano rectal junction, is 3-4 cms' in length and terminates at the anal verge. The anatomical anal canal extends from the anal verge to dentate line. But the surgical anal canal extend from the anal verge to the ano-rectal ring. It passes downwards and backwards from the perineal flexure. It has greatest surgical importance both because of its role in the mechanism of rectal continence and is prone to certain diseases.

In the normal living subject the anal canal is completely collapsed owing to the tonic contraction of the anal sphincters and the anal orifice is represented by an anteroposterior slit in the anal skin.

Relations of the Anal Canal:

Table

	Anterior	Posterior	Lateral
Both sexes	Perineal body	Anococcygeal ligament	Ischiorectal fossa
Male	membranous urethra Bulb of penis	Tip of Coccyx	-do-
Female	Lower end of Vagina	-do-	-do-

Interior of the Anal Canal:

This can be divided into 3 parts

a. Upper Part -

It extends from ano-rectal ring to the pectinate line and about 15 mm long, it is lined by columnar epithelium of endodermal origin. The mucous membrane shows anal columns, Morgagni, anal valves, anal sinuses, anal papillae and pectinate line. Anal glands are 4-8 in number and each has a direct opening into apex of anal crypt and occasionally two glands open into same crypt.

b. Middle Part-

It lies between the pectinate line above and white line of Hilton below and about 15 mm long. This part of anal canal is lined by a stratified squamous epithelium, which is thin, pale and glossy and is devoid of sweat glands. The Hilton's white line is situated at the level of internal anal sphincter. On digital examination in living subject an anal intersphincteric groove can be felt at this site.

c. Lower Part -

It is about 8 mm long and is lined by true skin containing the sweat and sebaceous glands.

Musculature of the Anal Canal:

(A) Anal Sphincters

(i) Internal Sphincter:

It is formed by the thickened (5-8 mm) circular muscle coat and is involuntary in nature. It lies above the subcutaneous part and deep to the superficial and deep parts of external sphincter and ends below at the white line of Hilton.

(ii) External Sphincter -

It is made up of striated muscle and is under voluntary control. It surrounds the whole length of anal canal and consists of three parts.

a) **Subcutaneous Part** - Which encircles the lower end of the anal canal and has no bony attachments.

b) **Superficial Part** - Which is attached to the coccyx behind and the perianal body in front.

c) **Deep Part** - Which surrounds the upper part of internal sphincter and is fused with the puborectalis.

(B) Ano-rectal Ring

The term was coined by 'Milligan and Morgan' to denote the functionally important ring of muscle which surrounds the junction of rectum and anal canal. This is composed of upper borders of the internal and external sphincters, which completely encircles the junction and on the posterior and lateral aspect, by the strong puborectalis sling. As a consequence, the ring is stronger posteriorly and laterally than anteriorly and its definition on the posterior aspect is accentuated by the forward angulation of the bowel at this level.

Recognition of the anorectal ring is of paramount importance in the treatment of abscesses and fistula in the anal region, its complete division inevitably results in rectal incontinence, while its preservation, despite the sacrifice of all the rest of the sphincter musculature, at least ensures that there will be no gross lack of control, though minor degrees of incontinence may result.

Anatomy of Rectum

The rectum is about 5 inches (13 cm) long and begins in front of the third sacral vertebra as a continuation of the sigmoid colon. It follows the curvature of sacrum and coccyx and ends 1 inch (2.5 cm) in front of the tip of the coccyx by piercing the pelvic diaphragm and becoming continuous with the anal canal. The lower part of the rectum that lies immediately above the pelvic diaphragm is dilated to form the rectal ampulla. It develops partly from hindgut and partly from cloaca both being endodermal in origin.

Curves of the Rectum:-

- (1) Antero-posterior curves - Sacral flexure and perineal flexure
- (2) Lateral curves - Upper, middle and lower, lateral curves

Peritoneal relations:

The peritoneum covers the anterior and lateral surface of the first third of the rectum and only the anterior surface of the middle, leaving the lower third devoid of peritoneum.

Visceral Relations :

(i) Anteriorly-

In males the upper 2/3 of the rectum is related to rectovesical pouch with coils of intestine and sigmoid colon. Whereas lower 1/3 of rectum related to the base of urinary bladder, vas deferens and prostate. In females the upper 2/3 of rectum is related to rectouterine pouch with coils of intestine and sigmoid colon and lower 1/3 of rectum is related to the lower part of vagina.

(ii) Posteriorly-

The rectum is in contact with sacrum and coccyx, ano-coccygeal ligament, piriformis, coccygeus, levator ani, the sacral plexus and the sympathetic trunks.

Mucosal Folds:-

The mucous membrane of an empty rectum shows two types of folds.

They are :

1. Longitudinal folds
2. Transverse or Horizontal folds

1. Longitudinal folds -

These are transitory and are present in the lower part of an empty rectum and obliterated by distension.

2. Transverse or Horizontal folds-(Houston's valves or plica transversalis)

These are permanent and most marked in distended rectum. Folding of mucous membrane continuing circular and sometimes longitudinal muscle coats forms them.

- a. The upper fold lies near the upper end of rectum and projects from the right or the left wall. Sometimes it may encircle and partially constrict the lumen.
- b. The middle fold that is largest and most constant lies at the upper end of rectal ampulla and projects from the anterior and right wall.
- c. The lower fold that is inconstant lies 2.5 cms below the middle fold and projects the left wall.

Supports of the Rectum:

(1) Waldeyer's fascia

It originates from the anterior surface of lower sacrum. It is strong vascular condensa-

tion that proceeds to the posterior aspects of the ano rectal junction.

(2) Denonvillier's fascia

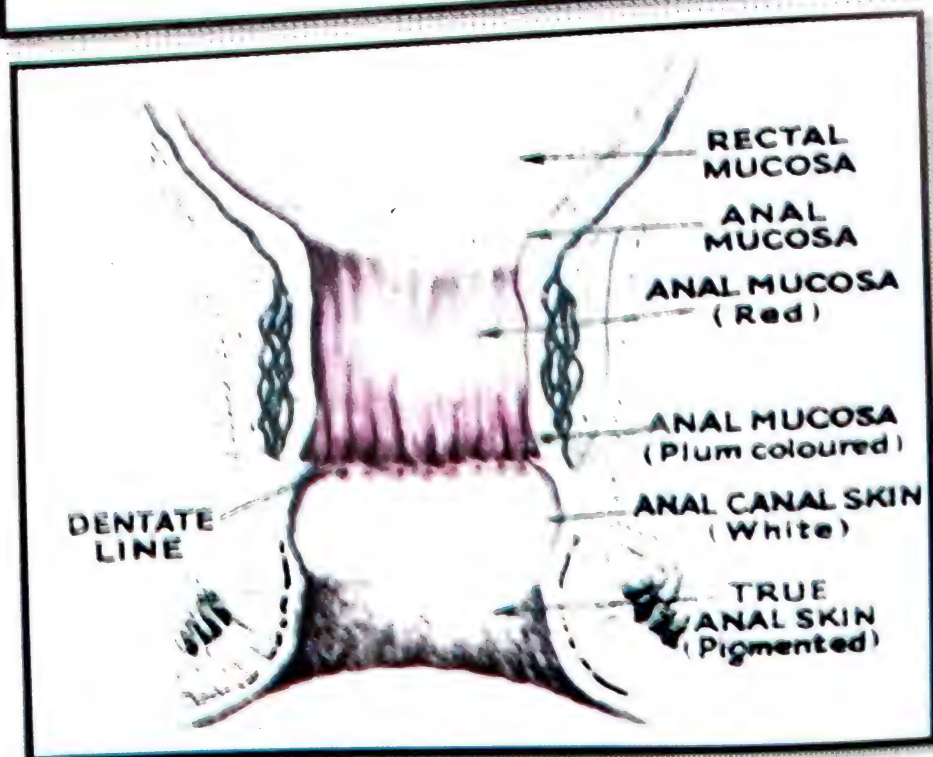
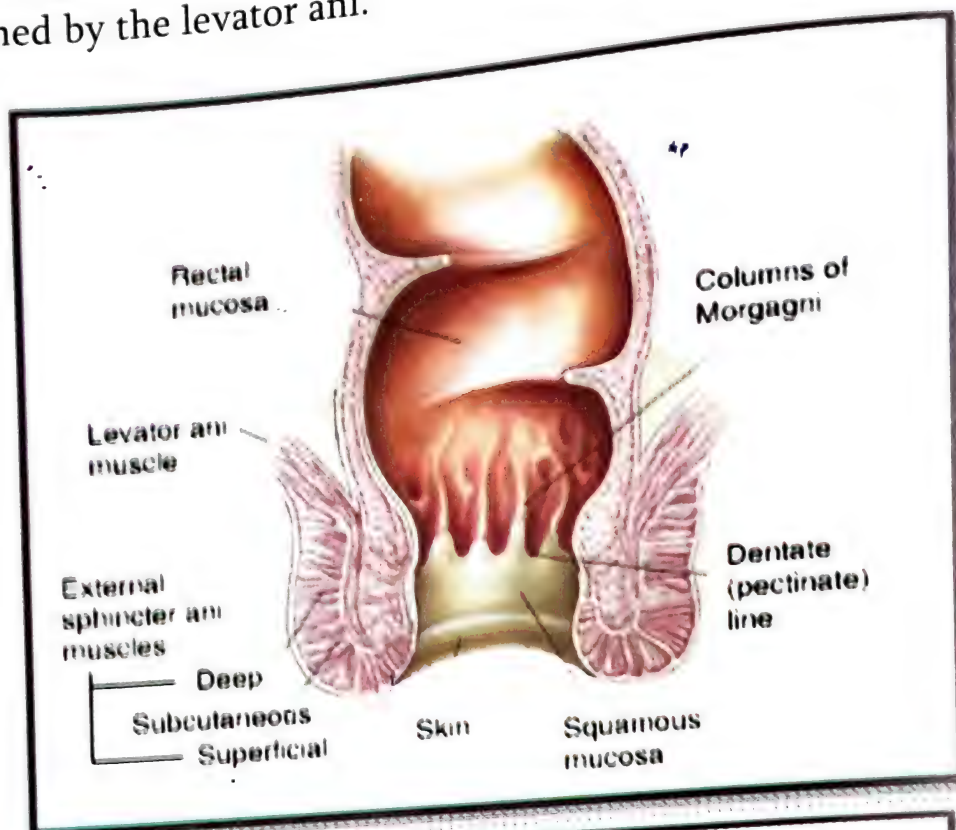
It intervenes between the rectum behind and the prostate and seminal vesicle vagina anteriorly but it is more close adherent to the rectum than to others.

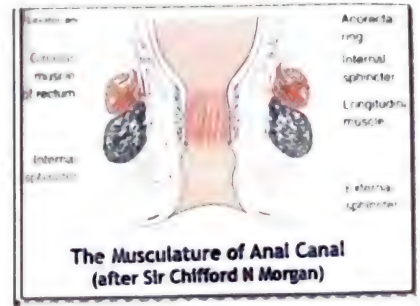
(3) Lateral ligaments of endopelvic fascia

The fibrous elements in this tissue are the part of the pelvic fascia and connect the parietal pelvic fascia on the side wall of the pelvis with the rectum.

(4) The Pelvic floor

It is formed by the levator ani.





Arterial Supply of Rectum and Anal Canal

- (i) **Superior rectal artery-**
It is the continuation of inferior mesenteric artery. The left and right branches of superior rectal artery supply the upper and middle rectum.
- (ii) **Middle rectal artery-**
It arises at anterior division of iliac artery and supply the lower part of the rectum and upper part of the anal canal.
- (iii) **Inferior rectal artery-**
It supplies external and internal sphincters below the pectinate line.
- (iv) **Median sacral artery-**
It supplies to the posterior wall of anorectal junction and anal canal.

Venous Supply of Rectum and Anal Canal

- (i) **Superior rectal veins –**
The upper and middle rectum are drained by superior rectal veins which enter the portal system via inferior mesenteric vein.
- (ii) **Middle rectal veins –**
It drains the lower rectum and upper anal canal, which open into the internal iliac veins only.
- (iii) **Inferior rectal veins –**
It begins from the external rectal plexus and drains the lower part of anal canal.
- (iv) **Internal rectal venous plexus (Haemorrhoidal Plexus)-**
It lies in the submucosa of anal canal and drains mainly into the superior rectal vein, but communicates freely with the external plexus and thus with middle and inferior rectal veins.
- (v) **External rectal venous plexus –**
It lies outside the muscular coat of the rectum and anal canal and communicates freely with the internal plexus.
- (vi) **Anal veins –**
These are arranged radially around the anal margin. They communicate with the internal rectal plexus and inferior rectal veins.

Lymphatic Supply of Rectum and Anal Canal

- (i) **Lymphatics** from more than the upper half of the rectum pass along the superior rectal vessels to the inferior mesenteric nodes.

- (ii) Lymphatics from the lower half of the rectum pass along the middle rectal vessels to the internal iliac nodes.
- (iii) Above the pectinate line, the lymphatics drain with those of the rectum into the internal iliac nodes.
- (iv) Below the pectinate line, the lymphatics drain into the median group of superficial inguinal nodes.

Nerve Supply of Rectum and Anal Canal

- (i) The rectum is supplied by both sympathetic (L1-L2) and parasympathetic (S2,3,4) nerves through superior rectal and inferior hypogastric plexuses.
- (ii) Above the pectinate line-The anal canal is supplied by Autonomic nerves, both sympathetic (inferior hypogastric Plexus L1-L2) and parasympathetic (pelvic splanchnic, S2,3,4).
- (iii) Below the pectinate line-It is supplied by somatic (inferior rectal S3,4) nerves.
- (iv) Anal Sphincters-The internal sphincter contracts by sympathetic nerves and relaxes by the parasympathetic nerves. The inferior rectal and perineal branch-of fourth sacral nerve supplies external sphincter.

Surgical Spaces

These are potential spaces surrounding the ano-rectal canal and are sites for collection of pus which might result in the formation of abscesses and fistulae.

1. Ischiorectal spaces –

There is a fossa situated both sides of anal canal. It is situated on the pelvic diaphragm. Its base is towards surface and apex upwards. Apart from these, there is a thin band of tissue intervening between the ischiorectal fossae posteriorly, which is still a weaker point and permits entry of pus from one fossa to the other, thereby producing a horseshoe abscess in the posterior perianal region.

2. Pelvirectal spaces –

It is made up of loose connective tissue above levator ani. It is divided into anterior and posterior regions of lateral ligament of rectum. These spaces can hold good amount of pus.

3. Submucous space –

It is situated above the white line of Hilton between the mucous membrane and internal sphincter.

4. Perianal space –

It surrounds the anal canal below the white line. It extends from white line of Hilton medially to pudendal canal laterally.

5. Retrorectal space –

It lies in the forward concavity of the sacrum. It is bounded anteriorly by rectal wall posteriorly by prevertebral fascia of sacrum, superiorly by peritoneal reflexion, inferiorly by pelvic diaphragm and laterally by lateral ligaments of rectum.

6. Intersphincteric space-This space is lying between the external & internal sphincter & considered important by some surgeon in genesis of abscesses in the region of anus and anal canal because the anal intermuscular glands terminate in this space.

7. Post anal space :-

It lies directly behind the Rectum and is divided by anococcygeal ligament into the following:

1. Superficial space
2. Deep (Retro sphincteric space of Courtney)

Left and right Ischiorectal fossas communicate through this space which allows posterior anal sepsis to result in horse shoe fistulae and abscess.

Physiology of the Rectum and Anal Canal

The function of the ano-rectal canal has to store and evacuate the faecal matter. This function is facilitated by the act of defecation. Defecation is an act of emptying of entire distal colon from the splenic flexure through the anal orifice in to the exterior, which is a reflex process.

The interval of the defecation varies from a day to 4-5 days, depending upon the nature of food taken. In majority of the people, this occurs once in a day.

Defecation mechanism :

Most of the time rectum is empty of faeces. When a mass of faeces makes movement into rectum desire for defaecation is normally initiated including reflex contraction of rectum and relaxation of anal sphincters. Experimentally it has been concluded that when the intraluminal pressure of rectum reaches about 20-25 cm of H₂O the pressure receptors which not only detect the increase of pressure but also differentiates whether the increase in pressure is due to gas, liquid or solid get stimulated.

Defecation reflexes :-

Three kinds of reflexes chiefly combine to form the defecation reflexes

- i. Intrinsic reflex
- ii. Parasympathetic defecation reflex
- iii. Other reflexes

i. Intrinsic reflex -

It is mediated by local enteric nervous system. When faeces enter the rectum, its distention initiates afferent signals that spread through the myenteric plexus to initiate peristaltic waves in the descending colon, sigmoid and rectum, forcing faeces towards the anus. As the peristaltic wave approaches the anus the internal anal sphincter is relaxed by inhibitory signals from myenteric plexus; if the external sphincter is consciously or voluntarily released at the same time, defecation will occur.

ii. Parasympathetic defecation reflex -

The intrinsic reflex functioning by itself is relatively weak, to be effective in causing defecation. Unless fortified by the parasympathetic defecation reflex the job is not completely done usually.

iii. Other reflexes -

Afferent signal entering spinal cord initiate other effects, such as taking deep breath, closure of the glottis and contraction of the abdominal wall muscles to force the faecal contents of colon downwards and at the same time cause the pelvic floor to extend down ward and pull outward on the anal ring to evacuate the faeces.

Except in babies and mentally inert people, the conscious mind in toilet trained human beings then takes over voluntary control of the external sphincter and either relaxes it to allow defecation to occur or further contract it, after an instantaneous contraction of the same initially, if the moment is of socially acceptable for defection. If so for long time the defecation reflex dies off after a few minutes and remains quiescent.

Normal anorectal function :-

- i. The rectum function as a capacitance organ, holding 650-1200 ml, where as daily stool output is 250-750 ml.
- ii. The anal sphincter mechanism allows defecation and continence. The internal sphincter accounts for 80% of resting pressure, whereas the external sphincter account for 20% of resting pressure and 100% of squeeze pressure. The internal and external sphincter are contracted at rest.
- iii. Continence requires normal capacitance, normal sensation at the transition zone above the dentate line, puborectalis function for solid stool, external sphincter function for fine control, and internal sphincter function for resting pressure. The puborectalis maintains the anorectal angle and contraction prevents solid stool passage.

1. Orthocolic reflex-

This occurs when a person awakes from sleep assuming the erect position.

2. Gastrocolic reflex-

This occurs when the person is moving and taking food and liquids. The increased intestinal pressure causes the relaxation of anal sphincters which is counteracted by voluntary contraction of external sphincter permits the act to proceed. If the delay is prolonged, a temporary reduction in the intensity of the urge may occur.

तत्र स्थूलान्त्रप्रतिबद्धमर्द्धमर्द्धपंचांगुल गुदमाहुः ।

तस्मिन् बलयस्तिस्त्रोऽध्यर्द्धगुलान्तरसम्भूताः प्रवाहिणी विसर्जनी संवरणी चेति ॥ (सु. नि. 2/5)

चतुरंगुलायताः सर्वास्तिर्यगेकांगुलोच्छ्रिताः ।

शंखावर्तनिभाश्चापि उपर्युपरि संस्थिताः ॥

गजतालुनिभाश्चापि वर्णतः सम्प्रकीर्तिताः ।

रोमान्तेभ्यो यवाध्याद्धो गुदौष्ठः परिकीर्तितः ।

प्रथमा तु गुदौष्ठादंगुलमात्रे ॥

(सु. नि. 2/6-8)

अर्धपञ्चाङ्गुलस्तस्मिस्त्रोऽहर्द्धगुलाः स्थिताः ।

बल्यः प्रवाहिणी तासामन्तर्मध्ये विसर्जनी ॥

बाह्या संवरणी तस्या गुदौष्ठे बहिरङ्गुले ।

यवाध्याध्रप्रमाणेन रोमाण्यत्र ततः परम् ।

(अ०ह०नि० 7/4-5)

CHAPTER 4

APPLICATION OF KSHARA SOOTRA IN BENIGN GROWTHS

Introduction

Etymology :-

Benignare (L) means mild, not recurrent or progressive

Neoes (G) means new, something new

Plasma(L) form, mold

Plasma (G) anything formed

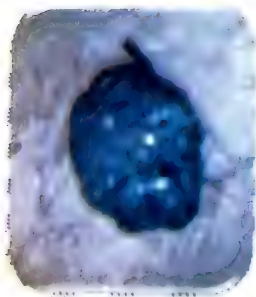
Thus, benign neoplasm is a new growth having fibrous capsule, limited potential for growth and regular shape and cells that are well differentiated. It does not invade surrounding tissue or metastasize to distant site. Some of the benign neoplasms are adenoma, fibroma, haemangioma and lipoma.

Benign growths are the most common occurring swelling in the body. They are often asymptomatic, but causes panic to patient as they think of it as fatal cancerous growth. This mental impression for the benign growth as cancer, compels them to visit the surgeon. Some other go for cosmetic reasons.

In modern surgery, these benign growths are treated by means of simple excision.

Here, these benign growths are dealt using minimum invasive parasurgical Kshara Sootra technique. This technique not only cures the problem but also check its chances of reoccurrences.

Different types of benign growths



PAPILLOMA OVER CHEST



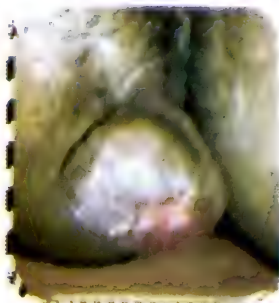
WART OVER THIGH



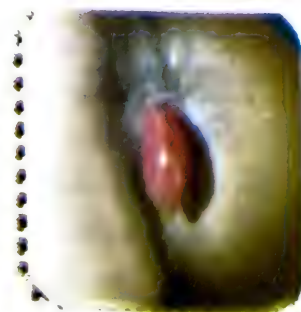
PAPILLOMA OVER GLUTEAL REGION



WARTS IN PERIANAL REGION



PAPILLOMA OVER PERIANAL REGION



RECTAL POLYP

Management of Benign growth by kshara sootra karma

Requirements

The equipments required for conducting the procedure are as under –

- | | |
|----------------------------|-----------------------------------------------------------------------------------|
| 1. Operation table | 2. Spot light |
| 3. Sponge holding forceps | 4. Anal speculum |
| 5. Artery forceps | 6. Round body curved needle |
| 7. Needle holder | 8. Round body needle. |
| 9. Allie's tissue forceps | 10. Scissors |
| 11. Surgical blades. | 12. Local anesthetic agents –
2% lignocaine with adrenaline,
2% lignocaine. |
| 13. Disposable syringes. | 14. Torch |
| 15. Lubricants | 16. Surgical gloves |
| 17. Apamarga Kshara Sootra | 18. Sterile gauge |
| 19. Bowels | 20. Sterile cotton bandage. |
| 21. Sterile pads. | |

Technique of kshara sootra karma in management of benign growth (Rectal Polyp)

Rectal polyps are tissue growths that arise from wall of rectum and protrudes into it. They may be benign or malignant.

Poorva karma (preoperative measures)

- The patient is given prophylaxis against Tetanus i.e. 0.5 ml of tetanus toxoid.
- Sensitivity is done using 2% lignocaine solution by intradermal injection.
- Soap water enema can be given half an hour before the procedure for proper cleansing of rectum in case of rectal polyp.
- The patient experiencing excessive anxiety should be administered a mild anxiolytic drug before the procedure.
- The patient is kept nil orally for 3-4 hours before the procedure.

Pradhana karma

Type of anaesthesia

Local anaesthesia or general anaesthesia can be used as per requirement.

Haemorrhoidal block

1% Lidocaine with adr. Hcl is given in the dose of 7mg/kg body weight in fan shaped direction about 1 cm below and above the anal orifice in midline using 21 G needle.

Transcutaneous pudendal nerve block

The ischial tuberosity is taken as the landmark to perform transcutaneous pudendal nerve block. The tuberosity is palpated subcutaneously through the buttock and 7.5 cm long needle (21G) is introduced into the pudendal canal along the medial side of the tuberosity. The pudendal canal lies about 1 inch (2.5 cm) deep to the free surface of the ischial tuberosity. The local anesthetic 5 ml of 1% is then infiltrated around each side of the pudendal nerve (Rt & Lt.).

Digital rectal examination is performed once again to exclude any specific pathology. The proctosigmoidoscopy is also carried out, if it is required.

Intracanal packing is given to avoid soiling during operation.

Digital anal dilatation (stretching of the anal sphincters) - A procedure similar to that described by Recamier (1829), is done instead of Lord's procedure. This procedure is done for better visualization of the rectal polyp.

Recamier's digital anal dilatation Technique

With the patient in lithotomy position, the anus is forcibly stretched by introducing first both index fingers and then index and middle fingers of both hands, which maintain a firm traction for three or four minutes. During this manoeuvre the forearms are fully pronated so as to stretch particularly the posterior wall of the anal canal. Often a better stretch is obtained in male patients by using the sagittal rather than the transverse plane as this avoids the fingers coming in contact with the ischial tuberosities. The problem does not arise in women, owing to wider pelvis.

Procedure

Step-1 Revelation of the rectal polyp or benign growth

During digital examination the rectal polyps will be palpated and bent finger will be helpful to bring the polyp out the canal. After digital dilatation, the lubricated proctoscope is inserted into anal canal slowly and the rectal polyp get prolapsed into the proctoscope. The position of the polyp is noted.

Step-2 Holding of the rectal polyp or benign growth

After visualizing the rectal polyp carefully, the body of the rectal polyp is held with the help of babcocks tissue forceps with slight traction. The traction on polyp should not be huge otherwise it may torn subsequently leading to profuse bleeding.

Step-3 Transfixation of the pedicle of polyp or benign growth

After holding the rectal polyp or benign growth, the pedicle is transfixed using Kshara sootra taken on a round body needle. There are many ways for transfixation of pedunculated benign growths. Some of them are mentioned below.

- This type of transfixation is particularly useful in cases of benign growths where the pedicle is broad. The transfixation of the pedicle of the pedunculated benign growth is done with the help of ligature on two needles.
- The first needle is pierced through the base of the pedicle at a distance $\frac{1}{3}$ rd from one end. The same needle is again passed through the same point from the other side.
- In the same way, the second needle is also pierced through the base of the pedicle at a distance of $\frac{1}{3}$ rd from the other end and again passed through the same point from the other side.
- Now ligature is cut proximal to the needles. The free ends of the ligature are now secured, two at either side and one in the middle.
- The advantage of this type of ligature is that none of the blood vessels is spared from ligation.

Alternatively, transfixation in the form of '8' figure can be done by passing the needle through the pedicle of the ligature from one side and then again piercing the needle through the same point from the other side. The needle is cut and the free ends of the ligature are secured and ligatured.

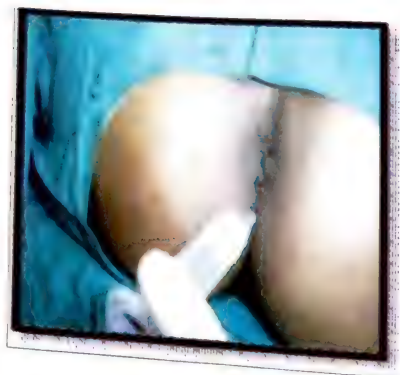
Besides, the transfixation in the form of horizontal mattress can also be done by pass

ing the needle through one end of the pedicle of the benign growth. Subsequently the needle is then passed through the other side of the pedicle from the other end. The ligature is cut proximal to the needle and free margins which cross each other are ligatured.

MANAGEMENT OF RECTAL POLYP BY APAMARG KSHARA SOOTRA



PATIENT IN LITHOTOMY POSITION



LOCAL HAEMORRHOIDAL BLOCK



LOCAL PUDENDAL NERVE BLOCK



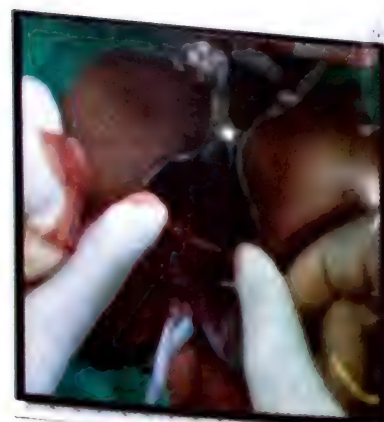
STEPS OF DIGITAL ANAL DILATATION (RECAMIER'S METHOD)



REVELATION OF THE RECTAL POLYP

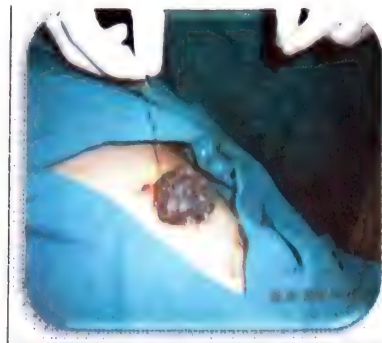
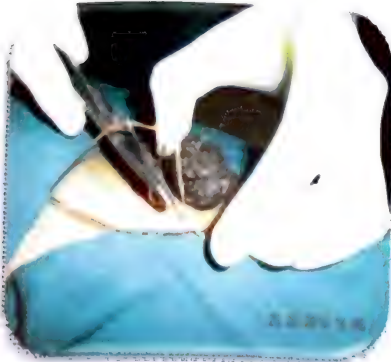


SECURING THE RECTAL POLYP



TRANSFIXATION AND LIGATION OF RECTAL POLYP BY KSHARA SOOTRA

MANAGEMENT OF PAPILOMA BY USING APAMARGA KSHARA SOOTRA

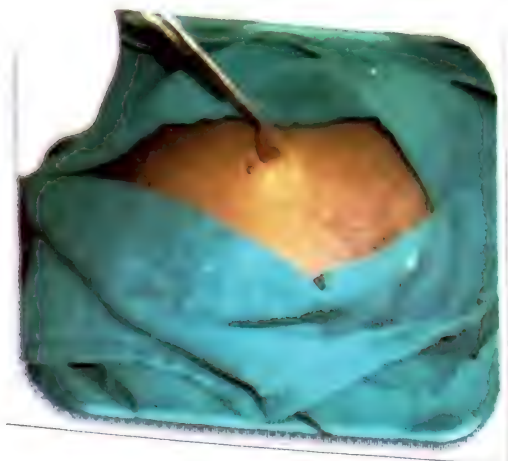


TRANSFIXATION OF PEDICLE OF BENIGN GROWTH

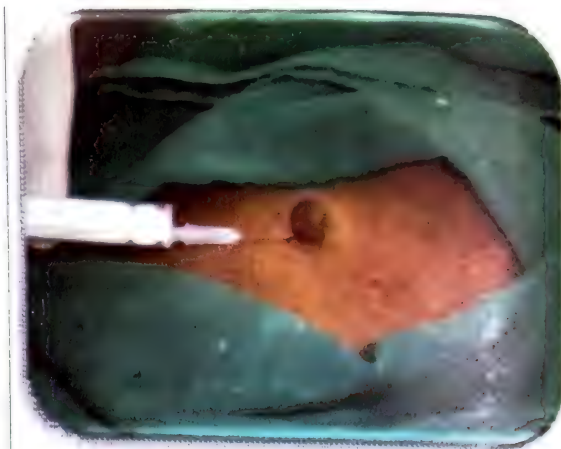


LIGATION OF PEDICLE OF PAPILOMA

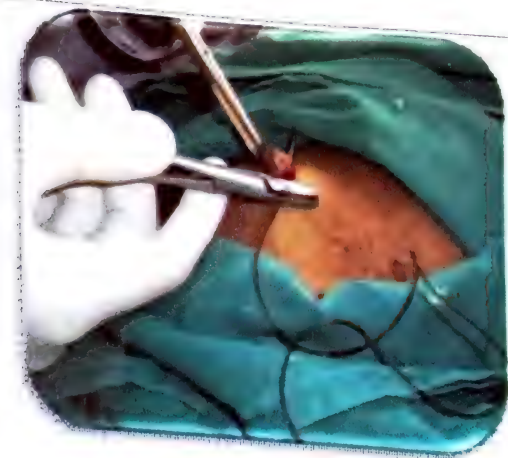
MANAGEMENT OF WART BY KSHARA SOOTRA KARMA



REVELATION OF THE WART



LOCAL ANASTHETIC INFILTRATION



STEP - 4 Ligation of the pedicle of the polyp or benign growth

After proper transfixation of the pedicel of the benign growth, the free ends of the *Kshara sootra* are ligatured. The *Kshara sootra* above the knot is cut leaving 2 -3 mm above it. This is done in order to reduce the action of *Kshara sootra* over the surrounding rectal mucosa. If the redundant part of the benign growth is large, then it is excised

Consequently sterile gauze piece soaked with *Jatyadi taila* is placed inside the anal canal to safeguard from corrosive action of extra *Kshara* and further aid in wound healing thereafter. T-bandage is applied to secure dressing in position.

Paschata Karma

- Simple non narcotic analgesics whenever required.
- Patient kept nil orally for 3 hours.
- Regular monitoring for hemorrhage is done without disturbing the anal dressing.

Post operative care and prescription

- Dressing is removed next morning after that *Ushnodaka avaghana*.
- Instillation of *Jatayadi taila* into the anal canal with the help of No. 6 rubber catheter attached with a 5ml of syringe.

- *Triphala gugulu* - 2 tablets x BD
- *Amalaki churna* - 5 grams x BD

Complication

- **Excessive inflammation** - It can be treated by using suitable broad spectrum antibiotic and NSAIDs drugs.
- **Pain** - Mild analgesics may be administered.

Diet

Light bland diet, leafy vegetables, milk, cream, curd, lassi etc. plenty of water orally.

गात्र प्रदेशे क्वचिदेव दोषाः

सम्मुच्छिता मांसमधिप्रदूष्य

वृत्तं स्थिर मन्दरुज महान्त

मनल्पमूल चिरवृद्धयपाकम्

कुर्वन्ति मांसोपचयं तु शोफं

तदर्बुदं शास्त्रविदो वदन्ति ।। (सु.नि.11/13-14)

CHAPTER - 5

APPLICATION OF KSHARA SOOTRA IN HAEMORRHOIDS

Introduction -

Sushruta, the father of Indian surgery has found that Arsha was a very troublesome disease for treatment, therefore he mentioned it as one of the eight mahagadas.

Vachaspathyam, described word 'Arsha' derived from the root 'ऋगतौ' with suffix 'Asu' having agama 'shut' in the formation of word meaning a disease having fleshy sprouts or shoots in the pudendum.

Charak explains that Arsha is an abnormal fleshy growth in anorectal region where as in other sites it is called as adhimansa, for example, in nasa karna, aksh etc.

Vagbhatta also defines arsha in a similar manner saying that when muscle like fleshy projection will behave like an enemy and create obstruction in guda marga, they are called Arsha.

Based on the semeiography observed in raktarsh i.e. Proctorrhagia & prolapse, it can be co-related with Haemorrhoids.

Haemorrhoids has played human civilization for centuries and is certainly one of the commonest elements that afflict human kind.

By common consent, the terms 'haemorrhoids' and 'piles' are used quite interchangeably, but etymologically the word have entirely different meaning.

The term 'haemorrhoids' is derived from the Greek adjective 'haemorrhoids' meaning bleeding (haima-blood, rhoos-flow) and emphasized the most prominent symptom of the disease in the majority of cases. The term 'pile' on the other hand, is derived from latin word 'pilula' meaning a ball.

✓Synonyms -

- i. Payu roga - meaning disease of anus.
- ii. Durnama or durnamakam - meaning bad or difficult to name or a bad one by name.
- iii. Guda keela - meaning of tag in anus
- iv. Anamakam - meaning infamous or the one which gives pain to life.
- v. Gudankur - meaning a spout or swelling in the anus.
- vi. Gudaya - meaning born or arising from guda.

Thus all synonyms show that the word Arsha pertains to a disease occurring in guda or anorectal region. It is torturing to the patient and it may create hindrance in the function of anorectal region.

Classification of Arsha

According to aetiology -

Sahaj

Uttarkalaja

According to clinical Observations-

Shuska (Dry)

Ardra (wet)

According to dosha - Vataja

Pittaja

Kaphaja

Sannipataja

Raktaj

Dwandaja

According to the site of origin -

Bahaya (bahayavali)

Madhyam (madhyam vali)

Abhyantar (antarvali)

According to therapeutic methods -

- | | |
|-------------------|-------------------|
| 1. Bhesaja sadhya | 2. Kshara sadhya |
| 3. Agni sadhya | 4. Shastra sadhya |

According to prognosis -

- | | |
|-----------|------------------|
| 1. Sadhya | 2. Kastha sadhya |
| 3. Yasya | 4. Asadhya |

Proverb given by John of Arderne, 1st English Surgeon-

The common people call them piles, Aristocracy call them haemorrhoides, French call them Figs, What does it matter is long as you can cure them.

Definition -

Piles are defined as the varicose condition of the internal haemorrhoidal plexus (which is above the pectinate line)

OR

These are dilated veins within the anal canal in the subepithelial region formed by radicles of the superior, middle and inferior rectal veins.

It is impossible to give an accurate figure of the prevalence of haemorrhoids. Although many patients present with symptomatic disease, many do not and some never have symptoms. Certainly vascular cushions within anal canal do not differ anatomically in normal individuals from those in symptomatic patient.

Burkitt (1972) has stated that haemorrhoids is rare in rural Africa and contrast to this with the much higher incidence of anal symptoms in blacks in the USA and in urban Africa. Haemorrhoidal disease is also prevalent in the elderly, especially over 50 years of age. Due to rapid urbanization globally and increasing life expectancy, haemorrhoids has emerged as a significant health problem affecting around 50% of population over the age of 50 years.

Haemorrhoids present with a distressing symptoms complex of pain, painless bleeding, prolapse, discharge, irritation and symptoms of secondary anaemia. It can even present as an emergency if complication like thrombosis, strangulation, ulceration, infection, gangrene or portal pyaemia occurs. However, diagnosis of haemorrhoids is usually readily established by careful consideration of the history combined with examination especially by proctoscopy.

Aetiology

- i. Idiopathic causes.
- ii. Secondary causes *✓

I. Idiopathic causes

- a. Hereditary - it is often seen in members of the same family.
- b. Anatomical -
 - i. Absence of valves in superior haemorrhoidal veins.
 - ii. The veins pass through the rectal musculature, 10 cm above the anus, will cause occlusion of the vein and congestion during defecation.
 - iii. The radicals of superior rectal vein lie unsupported in loose submucous connective tissue of the rectum.
- c. Exciting causes -
 - i. Straining to expel constipated stool caused dilatation of the venous plexus

- ii. Diarrhoea and dysentery.
- iii. Enteritis
- d. Physiological causes –
Hyperplasia of the corpus cavernosum rectum, may result from failure of mechanism controlling the arterio-venous shunts producing superior haemorrhoids. varicosity and haemorrhoids.
- e. Diet –
Low roughage western diet may excite haemorrhoids formation.

II. Secondary causes –

- i. Carcinoma of rectum – Compresses on the superior rectal vein and give rise to haemorrhoids.
- ii. Pregnancy - Compress superior rectal vein as also causes secondary laxity of smooth muscle of the veins.
- iii. Difficulty in micturation – stricture of urethra or enlarged prostate will increase intra abdominal pressure and will raise the venous pressure in the superior haemorrhoidal veins to cause haemorrhoids.
- iv. Portal hypertension – the superior haemorrhoidal vein is tributary to the portal venous system so portal obstruction due to any cause can cause haemorrhoids.

Classification

Classification in relation to pathological anatomy

- i. Primary haemorrhoids
- ii. Secondary haemorrhoids

I. Primary haemorrhoids –

These are 3 in number seen at 3, 7 and 11 O' clock position. This rectal artery divides into right and left main branches the left branch continues as a single vessel to terminate at 3 O' clock, whereas the right branch divides into two branches, one terminates at 7 O'clock and the other at 11 O'clock.

II. Secondary haemorrhoids –

Presence of additional haemorrhoids in between the primary piles are known as secondary piles.

Degree of haemorrhoids

- i. First degree haemorrhoids
- ii. Second degree haemorrhoids
- iii. Third degree haemorrhoids
- iv. Fourth degree haemorrhoids

i. **First degree haemorrhoids –**
Haemorrhoids does not come out of the anus.

ii. **Second degree haemorrhoids –**
Haemorrhoids comes out only during defecation and is reduced spontaneously after defecation.

iii. **Third degree haemorrhoids –**
Haemorrhoids comes out only during defaecation and does not return by themselves.

need to be replaced manually and then they stay reduced.

iv. **Fourth degree haemorrhoids** –

The haemorrhoids is permanently prolapsed at this stage. Great discomfort is complained of with a feeling of heaviness in the rectum.

Clinical features

Bleeding–

It is bright red, painless and occurs along with defecation. The patient complains that it splashes in the pan as the stool comes out and may continue for months or even year.

Prolapse –

It is a later symptom, patient may complaint of a protruding mass on straining while defecation and the mass disappears spontaneously after the act is over whereas in long standing cases the mass does not reduce digitally into the anal canal.

Pain –

It is not characterstic of haemorrhoids unless there is associated thrombosis or fissure in ano.

Mucous discharge –

It is particular symptom of prolapsed haemorrhoids. This mucous discharge is due to engorged mucous membrane. Pruritis ani will be caused by such mucous discharge.

Anaemia –

It is often seen in the long standing cases of haemorrhoids due to persistent and profuse bleeding.

Examination

On inspection

Internal haemorrhoids without prolapse will not show any abnormal feature. IInd and IIIrd degree internal haemorrhoids may be seen only when patients strains and that too transiently and the prolapse disappears after the straining is over.

Digital examination

Cannot feel an uncomplicated internal pile unless it is thrombosed.

Proctoscopy

It will reveal the internal piles. The proctoscope is introduced as far as it does. The obturator is then removed and with an illuminator the inside of the anal canal is visualized. The proctoscope is now withdrawn slowly and the internal haemorrhoids will be seen bulging into the proctoscope.

Complications

Bleeding

Particularly in the first degree and early stage of the second degree. A patient with first degree haemorrhoids for quite a long time will become anaemic. Bleeding usually occurs externally. Only when a bleeding haemorrhoids is retracted, it may bleed internally into the rectum.

Thrombosis

The thrombosed haemorrhoids become dark purple or black and feel solid. The anal margin become oedematus and there is severe anal pain. Pain may continue for a week or so until the oedema subsides and the thrombosis is observed.

Strangulation

Second degree haemorrhoids are more often affected by this condition. When the internal haemorrhoids prolapse and become gripped by the external sphincter, further congestion occurs as the venous return becomes impeded and strangulation occurs.

Gangrene

Only occurs when the arterial supply of the haemorrhoids is somehow or by other way constricted, then sloughing occurs which is usually superficial.

Fibrosis

Usually follow thrombosis of the internal haemorrhoids. It also follows transient strangulation. Fibrosis of external haemorrhoids is much more common than that of an internal haemorrhoids.

Suppuration

Only occurs as a result of infection of thrombosed haemorrhoids. Throbbing pain with perianal swelling occurs. Perianal or submucous abscess may follow.

Pylephlebitis (portal pyaemia) –

This usually follows infection and suppuration of the haemorrhoids, which ultimately causes portal pyaemia and liver abscess.

Differential diagnosis-

External piles-bluish colour of the anal skin due to underlying veins and varices.

On straining, engorged external marginal veins, causing many soft swellings around the margins, which disappears after straining/ by gentle pressure.

Anal epithelioma- It is a rare condition. It gives pebbled appearance. Swelling is firm and nodular. Diagnosis is confirmed by biopsy.

Condyloma latum-it is secondary lesion of syphilis. Appearance of small flat topped wart like growth.

Condyloma acuminata-lesions are multiple. Cauli-flower like appearance and are pointed. They secrete excess moisture with irritation and unpleasant odour.

Sentinel tag-it always accompanies anal fissure.

INTERNAL PILES-

Hypertrophied anal papilla-a firm mass, arising from a pedicle in the region of dentate line.

Pedunculated polyps-arises from mucosal lining of rectum. It is a painless condition.

Sessile, polypoid (Adenomatous)- are true carcinomas. Easily palpated. Biopsy confirms diagnosis.

Haemangioma and Lymphosarcoma- mucosa is coarsely pebbled, but intact easily traumatized.

Prolapse- partial rectal prolapse affects either a part or of the circumference of anal outlet. The prolapsed portion is composed of longitudinal folds. Complete rectal prolapse is characterized by concentrically arranged mucosal folds.

All these afore said facts have encouraged researchers throughout the world to come up with various forms of treatment for haemorrhoids. Various treatment modalities available for haemorrhoids include operative as well as nonoperative methods. Non-operative methods including medicinal treatment, sclerotherapy, cryosurgery, rubber band ligation, manual dilation, infrared coagulation, biopolar coagulation, direct current coagulation, laser coagulation.

Operative treatments of haemorrhoids include formal haemorrhoidectomy by different

methods like high ligation and excision (miligan morgan type), low ligation and excision (miles operation), submucosal haemorrhoidectomy, closed haemorrhoidectomy, circumferential excision of entire pile bearing area with suture (whitehead operation), stapled haemorrhoidectomy.

Treatment-

Non Pharmacotherapy

Aahar - Langhan, Moongdal soup, deepan, pachana, vatanulomana ausadh.
Vihara - Avagaha, dhupana, vasti, swedana, abhyanga.

Pharmacotherapy -

Phytotherapy -

General- Kutaja (*Holarrhena antidysenterica*), bilva (*Aegle marmelos*), chitraka (*Plumbago zeylanica*), haritaki (*Terminalia chebula*), shunthi (*Zinziber officinale*), ativisha (*Aconitum heterophyllum*), yavasa (*Fagonia cretica*), Daruharidra (*Berberis aristata*), Vacha (*Acorus calamus*), Chavya (*Piper retrofractum*) etc.

Local - lepa of Snuhi ksheera with haridra

Chemotherapeutic drugs: -

Treat the patient for anaemia by haematinics. Blood transfusion may be necessary in severe cases of anaemia. The constipation should be treated by laxative and suitable coagulants should be used. The flavonoids as Diosmin, calcium dobesilate are also useful to tone up the vessels.

Local - It should be ascertained, whether the piles are primary or secondary. Idiopathic or primary piles require treatment.

In 1st degree haemorrhoids local application of medicated oil or astringent ointment is first tried. Ointment containing calcium dobesilate, policresulen etc. and can be used locally.

Parasurgical -

RC Palliative - Ksharakarma, injection therapy, ^{bio blood letting} barron's band ligation, ^{Agam Karma (Cauterization)} LASER-coagulation, cryosurgery, lord's procedure.

Curative - Ksharasootra karma

Surgical - haemorrhoidectomy

Injection therapy -

Sclerosant injection (5% phenol in almond oil) has been the method of treatment of small vascular haemorrhoids and indeed is used to control all cases of 1st degree haemorrhoids.

Rubber band ligation -

Rubber banding is the ideal method of treatment of treating large 1st degree and second degree internal haemorrhoids in absence of associated tags or external haemorrhoidal component.

Equipment and technique of rubber band ligation

Equipment

The original Barron Ligator 26, 30 comprises a long shaft that can be introduced through a proctoscope. It contains within it a rod which activates the inner of the two concentric drums at the working end of the instrument.

Proximally there is a handle which is squeezed to advance the outer drum so as to release the rubber ring. The rubber O-rings are 2-3 mm in diameter and are small sections of black rubber tubing.

The rubber bands are stretched over a loading cone from which they are pushed on to the 11 mm inner drum of the instrument. Better strangulation of the mucosa appears to occur if two bands are used rather than one. The shafts and drums of the instrument are interchangeable so that a number of shafts can be prepared in advance and interchanged on to the same handle. Alternatively rubber bands can be reloaded on to the same instrument. This reloading procedure may not be aesthetically desirable as the cylinder becomes contaminated with faeces.

Technique

Preoperative Work up :

- 1) Written informed consent of the patient and attendant should be taken.
- 2) Anti-tetanus prophylaxis should be given.
- 3) No special bowel preparation is required. However, if on preliminary anoscopic examination, rectum is found loaded, proctoclysis enema should be given.

Operation Steps :

- 1) Position : Barron's band ligation is done with patient in left lateral position.
- 2) An assistant is required to hold the handle of the proctoscope.
- 3) The inside of proctoscope is illuminated by inbuilt or external light source.

Technique of application :

The proctoscope is passed through the anal canal into the rectum. The haemorrhoidal masses are identified, if necessary, by asking the patient to strain a little. The Barron's ligator is introduced through the anoscope and brought to bear on the mucosal part of the most prominent pile. The long alligator forceps (or a long pair of Alli's tissue forceps) are next passed through the proctoscope and through the drum to the end of the ligator. The pile is seized with the forceps and drawn well into the drum while the distal end of the drum is firmly pressed against the anal canal wall, special care being taken to see that its inferior edge was at least 1 cm above the pectinate line.

If at this point, patient complains of pain or discomfort, the mucosa should be released and grasped again a little higher up away from pectinate line. By closing the handle of the ligator, the rubber ring is pushed off the drum and instantly closed on the base of the pile; the resulting nub of strangulated tissue is about 1 cm. in diameter (about the size of a small cherry).

Barron (1963)²⁶ recommended only one ligation at each session followed by subsequent ligations at 3 weekly intervals. However, Bartizal and Slosberger (1977)³⁶, Muir et al (1980)³⁵, Cheng et al (1981)³⁷, Goligher (1984)¹, Lee H.H (1994)³⁸, Khubchandani^{27,39} have advocated multiple ligations at same sitting without any

crease in complications. Multiple ligations are time saving and cost effective.

Post operative follow up:

- 1) Rest for a few minutes (15-20 minutes).
- 2) Patient should be advised not to strain to avoid slippage of Rubber Band.
- 3) Simple non narcotic analgesia (PCM) can be given on demand by patient, to overcome mild pain, discomfort and foreign body sensation.
- 4) Bulk evacuant and light diet should be prescribed till sloughing off of haemorrhoidal masses.
- 5) Patient should be advised to report immediately in case of dysuria, retention urine, proctorrhagia, so that complications like reactionary or secondary haemorrhage and pelvic cellulitis could be excluded.

Cryo surgery -

The new form of cryotherapy involves freezing the tissues of haemorrhoids for a sufficient time to cause necrosis. It includes the application of liquid nitrogen at a temperature of -160°C is used at the pedicle of the haemorrhoids for 3 min each.

Maximum anal dilatation (Lord's procedure) -

Maximal anal dilatation was introduced in an attempt to disrupt this tight band. The whole of anal canal and lower rectum are slowly and uniformly dilated with the fingers until 3 fingers of both hand are inserted.

Operative treatment -

Haemorrhoidectomy -

Indication -

- For large third degree haemorrhoids
- Fibrosed haemorrhoids
- Failure of conservative treatment of IIInd degree haemorrhoids
- Interno external haemorrhoids

Types of Haemorrhoidectomy -

- Ligature and excision method
- Closed haemorrhoidectomy
- Submucous haemorrhoidectomy (Park's)
- Circular stapled haemorrhoidectomy
- Endo stapling technique

Haemorrhoidectomy is of 2 type mainly-

1. Open haemorrhoidectomy
2. Closed haemorrhoidectomy

Open haemorrhoidectomy-position used for this is either lithotomy or jack-knife position. Proctoscope is inserted to identify site of three pile mass. Inj. Xylocaine with adrenaline (1:200,000) with saline is injected around skin adjacent to each haemorrhoid and in the lower part of intersphincteric space and in submucosal plane of haemorrhoids. Pile mass and adjacent skin adjacent to haemorrhoid is hold with tissue forceps and grasped in left hand. A 'V' shaped incision is made on surrounding perianal skin. cut is deepened down towards anal canal. Fibers of internal anal sphincter are swept away. Then haemorrhoidal tis-

sue is excise to leave the apex of haemorrhoid intact for ligature. It is enclosed in an arterial clip and transfixed using non absorbable suture material. Haemostasis is maintained by use of cautery gauze dressing is then applied to each haemorrhoidal area.

Post operative complication :

1. Retention of urine
2. Reactionary and secondary haemorrhage
3. Portal pyaemia

Kshara Karma therapy in the treatment of Arsha :-

The aim of ayurveda is to cure the disease of the diseased person and guard the health of healthy person. The latter may be regarded as preventive or prophylactic measures. In the management of Arsha, the treatment can be classified into preventive and causative measures.

The general principle in prevention of all disease is to avoid such factors which are enumerated as causative factors in the development of any disease as already discussed. Mandagni or poor digestion and constipation may be regarded as principal factors. Therefore such measures which keep the Agni in improved state and bowels regular, would prevent development of Arsha. In addition other factors enumerated in the etiology to the responsible in the causation of Arsha should also be avoided eg. Constipation, sedentary habit, riding, undesirable posture, etc. besides the person should follow the general instructions as described for each season, make the proper use of shodhana therapy and should not indulge in unhealthy habits. Even, Sushruta has described four therapeutic measures in the treatment of Arsha viz. Bhesajakshara, Agni and Shastrakarma.

Kshara is a caustic, alkaline in nature obtained from the medicinal plants. Kshara is a milder procedure compared to surgery and thermal cautery. It is capable of performing typical functions like, chedana, bhedana and lekhana and destroys the tridosha disease, it is versatile because even such place, which is difficult to approach by ordinary measure can be treated by this method.

Sushruta has indicated kshara karma in soft spread out, deep rooted and elevated type of Arsha. According to doshic involvement, mild kshara should be used in pittaja and raktaja arsha and tikshana kshara in kaphaja and vataja arsha.

Kshara karma in Arsha can be performed with the help of Arsho yantra. In case of prolapsed rectum and big, prolapsed arsha, kshara should be applied without yantra.

Method

After introduction of arsho yantra, arsha are visualized, there after it should be pressed by cotton swab with the help of a measurable draivmukhi salaka. Kshara is to be applied through the opening of arsho yantra and should be covered by hand and wait until the counting of one hundred, then afterwards, kshara may be applied again taking in to consideration, the strength of kshara and severity of disease. The application should be stopped when arsha begin to acquire colour of ripe jambu. The kshara should be washed out by sour fluid or juice of citrus fruits. The pile mass should be emolliated by ghrita mixed with madhuka and instrument should be taken out. The pile masses should be treated one by one, at an interval of seven days each. In case of multiple piles, the right should be managed first and then the left one.

Method of submucosal sclerotherapy with kshara :

Poorva karma :

A day prior to injection mild laxative like Eranda-Bhrista Haritaki in the dose of 3 to 6 grams is given to clean the bowels and local shaving is also done. The patients is kept on fast over night and on the day of sclerotherapy procedure, a simple soap water enema is given to clean the colon, rectum and anal canal, in the morning on the day of the procedure.

Preparation of ksharodak :-

The powder Apamarga- Kshara 50mg. is dissolved in 3 ml of distilled water and again filtered through two layers of whatmann fine grade filter paper. Thereafter prepared Kshara solution is dissolved in the 6ml almond oil as per requirement, keeping in view the solubility and PH 10-11. Alternatively, 5% phenol in almond oil can be used for the purpose of sclerotherapy.

Position :-

Lithotomy or Lt. lateral position the buttock elevated by sand bag at the edge of the table.

Equipments :-

The procedure is carried out without anaesthesia. The equipment required for conducting the procedure are as under :-

1. Gabriel's type piles injection syringe.
2. A long needle (used through proctoscope).
3. Proctoscope.
4. Sclerosant i.e. Kshara- solution.
5. Almond oil
6. Distilled water
7. Cotton pellets.
8. Gloves.
9. Haemostat forceps
10. Sponge holding forceps.
11. Lubricant.
12. Torch

The well lubricated proctoscope is introduced further in the anal canal & rectum and then obturator removed. Thereafter, the proctoscope is gradually withdrawn to display the pile mass in the lumen, for this purpose, the proctoscope during the withdrawal is manipulated in such a manner that the piles begins to prolapse into the open end of the proctoscope at the level just below the Anorectal Ring.

Using the Gabriel's syringe with the bevel of needle directed towards rectal wall, loaded with Kshar solution in almond oil, the injection is made into submucosal plane at the base of each pile or just above the anorectal ring, the sufficient quantity, around 3 ml of the solution, should be injected to produce a fair swelling or elevation and pallor of the mucosa. The recognition of accurate injection is made by Striation sign i.e. mucosal and sub mucosal vessels are seen radiating from the yellowish background of oil wheel.

The solution spreads in the submucosa upwards to the pedicle and down words to the internal haemorrhoids and secondary haemorrhoids if present, but it is prevented by intermuscular septum from reaching the external haemorrhoids.

If there is only one haemorrhoids present, single injection in first sitting is given with all precautions. If the piles at all three positions present, the injection is made in each pile in session.

Further injections on three occasions are given at each pile at the interval of 3 weeks if necessity is felt.

RULE OF "3" TO REMEMBER:-

1. 3 ml required at each pile.
2. All three piles may be injected by turn in same session.
3. Maximum three sessions may be required.
4. Interval between each session is usually three weeks.

Precautions :-

1. At the time of injection reassurance is given to the patient that if any discomfort it will pass off. The discomfort will be minimized by lying down for an hour.
2. Care is taken not to give injection to prostate, anteriorly, for resulting prostatitis, crippling.
3. Care should be taken neither to inject the mucosal layer nor muscular coat, as result in suppuration.
4. The injection in quantity of 3 ml is given slowly around the base of the pile above anorectal ring, if subsequent injections are required, the sclerosed mucosa will not usually take such a volume and to 1-3 ml of Kshara Solution is only required below initial injection site.
5. The patient is examined weekly after initial injection.

Post injection observation :-

- Although this injection is painless yet a dull ache is common for few hours. After the injection submucosally in pile mass, the patients feels some sort of discomfort, heaviness in the anal canal. So, in order to combat it, reassurance is sufficient that it will pass off.
- Secondly, the discomfort is minimized by lying down for few hours.
- Moreover, some apprehensive patient may need the dose of mild analgesic whereas others, simple sitz bath is sufficient.
- Some patient may complain of mild pain in the abdomen, for which, hot water fomentation is sufficient to help them.
- Burning sensation may also be observed in the patients during post injection period, it is treated simply by sitz bath.
- All the patients are advised to take mild laxative viz Panch Sakar Powder etc. right from the first day of injection, to regulate the bowel.
- Slight & transient bleeding from the point of puncture is noted which needs no treatment except pressure for few seconds which is applied for controlling haemorrhage transproctoscopically by cotton pellet held in haemostat.

Complications of procedure (ksharodak-sclero therapy)

1. Dull ache, usually nil if injection is made high up, pain indicates either too low or too deep injection.
 2. Allergic manifestation.
 3. Hepatic Disturbance rarely by oil embolism.
 4. Sub mucosal Abscess and ulceration due to either intra-mucosal or excessive amount of drug.
 5. Transient Haemorrhage from injection site due to the puncture of some branch of superior haemorrhoidal artery. Usually, controlled by transproctoscopically, by direct pressure on the bleeding point by cotton pellet held in haemostat.
 6. Occasionally, gangrene in the anal canal.
 7. Genito-urinary complications may occur in Males patients and particularly when anterior pile mass has been injected. These complications are:- Retention of urine, Haematuria, Prostatic Abscess and very rarely urinary fistula in perineum.
- Haematuria occur consequent upon the urethral damage while injecting anterior pile whereas prostatic abscess is the result of too deeper injection in anterior pile with superadded infection.

Advantages

1. Quick method & O.P.D. procedure.
2. Procedure can be carried out at O.P.D. level.
3. Relatively Painless.
4. Comparatively free from complications.
5. Suitable for the patients who are in extremely debilitating condition or unfit for surgery.
6. Parasurgical one and good for first & second degree internal piles even for 3rd degree piles as palliative measure.
7. Patients remain ambulatory.

Disadvantages :-

1. Faulty technique may lead to sloughing which is dangerous one viz Prostatic Abscess can be crippling.
2. Arterial pile can not be dealt.
3. Infected piles can not be dealt.

Objective of injection therapy :-

It is to initiate chemical thrombosis and thereby sclerosis of haemorrhoidal plexus leading to stoppage of bleeding and secondly causes fibrosis in submucosal plane, which fixes the loose redundant mucous membrane to the inner muscle-layer and draw up the pile mass so that it no longer prolapses and pile is grasped by sphincters.

Technique of Kshara Sootra Karma in haemorrhoids:

Purva Karma:

- 1) Written informed consent of the patient and attendant.
- 2) Give antitetanus prophylaxis.
- 3) Do Xylocaine sensitivity test.
- 4) Shaving of the operation field and soap water enema should be given 12 hours prior to

to operation.

5) Patients are to be kept nil orally for 12 hours before operation.

6) Another soap water enema is given in the morning of operation day. Either solution of polyethylene glycol with electrolyte (peglac solution) should be given one evening prior to operation.

Pradhana Karma:

1) Type of Anaesthesia:

(a) Sedation with Diazepam 10 mg., I/V and Pentazocine 30 mg., I/V slowly after securing I/V line.

(b) Haemorrhoidal block: 1% of Lignocaine with adrenaline is given in the dose of 6 mg/kg body weight in fan shaped directions about 1 cm. below and above the anal orifice in midline, using 21 G spinal needle.

Additional, Pudendal block is given optionally, by injecting 10 ml. of 1% lignocaine with adrenaline just medial to right and left ischial tuberosities with a 7.5 cm long needle (21G). Maximum safe dose of lignocaine with adrenaline, i.e., 500 mg. should not be crossed.

2) Position: Lithotomy position

3) Cleaning and draping of the part should be done.

4) Thorough proctoscopic examination is performed to identify the haemorrhoidal masses and their positions.

5) Digital anal dilatation of no more than six fingers, a procedure similar to that described by Recamier and Maisonneuve, can be done instead of the Lord procedure. Intracanal packing is given to avoid soiling during operation.

6) Revelation of the 'Triangle of Exposure': The skin covered component of each of the main piles is seized with Allis tissue holding forceps in usually 3, 7, 11 O'Clock positions and retracted outwards, Allis tissue forceps being kept in anatomical positions. This reveals the 'Triangle of Exposure' i.e., mucosal component or internal haemorrhoids at upper pole and dermal component in the grip of Allis forceps at lower pole.

7) Holding of pile masses: Left lateral internal pile is grasped with pile mass holding forceps. The two forceps attached to left lateral pile are taken in the palm of left hand and drawn outwards and left index finger is used to stabilize the inner aspect of the pile mass.



Haemorrhoidal block



Recamier's Digital Anal Dilatation



Revelation of 'Triangle of Exposure'



Holding of Pile Mass



Making Semicircular Groove with blunt scissors



Crushing of Pile Mass Pedicle



Transfixation of Pile Mass Pedicle



Ligation of Pile Mass Pedicle



Inspection at the end of Operation



T-Bandage to hold Lay On Dressing

- 8) A semi-circular groove is made: with blunt scissors in the anal and perianal skin including the external part of haemorrhoids held with Allies tissue forceps. The incision should reach the mucocutaneous junction but not extend into the mucosa. All this while, the index finger is firmly pressed against the scissors and traction maintained so that lower edge of internal sphincter is preserved and not included in the tissue of transfixation of the pedicle of piles with Kshara Sootra.
- 9) Crushing of pedicle of pile mass: Without carrying out further dissection, Pile Mass Crushing Clamp is applied to the external and internal pile components held with two forceps. The pile masses are twisted and the pedicle of pile mass is crushed within the jaws of Pile Mass Crushing Clamp until it assumes a thinned out shape.
- 10) Transfixation of pile mass: Kshara Sootra loaded on 76 mm round body curved needle is passed through the base of crushed pedicle and transfixation of both external and internal part of haemorrhoidal mass is done with Kshara Sootra.
- 11) Ligation of pile mass: Pile Mass Crushing Clamp is removed only after ensuring tight ligature at the crushed base of the pile mass.
- 12) Excision: The haemorrhoidal mass is excised about 5 mm. distal to ligature and Kshara Sootra is left in situ for further inspection at the end of the operation.
- 13) Right posterior and last of all, right anterior haemorrhoidal masses are to be dealt with in the same manner except that the pile masses are held in right hand and the groove made with left hand.
- 14) The three transfixed and ligated pile masses are inspected once again at the end of the operation, haemostasis ensured, transfixed Kshara Sootra divided to a short length.
- 15) Gauze soaked in Jatyadi Taila is placed inside the canal to safe guard the anal canal from corrosive action of extra Kshar. One end of anal packing given initially is withdrawn out for facilitating easy removal.
- 16) T-bandage is given to hold the lay-on dressing in position.

Paschata Karma:

- 1) Simple non-narcotic analgesics (paracetamol) can be given to the patient on demand.
- 2) Intravenous fluid perfusion is restricted to minimum (not more than 500 ml.) to avoid urinary retention.
- 3) Patients are orally allowed after 3 hours of operation.
- 4) Regular monitoring for haemorrhage is done, without disturbing anal dressing.
- 5) Dressing is removed next morning after luke warm sitz bath.
- 6) Bulk evacuant (Isabgol-triphala) is prescribed and light diet is advised till first bowel movement.
- 7) the excision of haemorrhoidal masses with automatic removal of Kshara Sootras and wound healing are monitored daily till discharge of patient from hospital.
- 8) Patients are reviewed at Day 1,3,7,15,30 post operatively.

☆ 927-31527 (last page P-120)

आरिवत्प्राणिनो मांसकीलका विशसन्ति यत् ।
अर्शासि तस्मादुच्यन्ते गुदमार्गनिरोधतः ॥

(अ. ह. नि. 7)

अर्शासां प्रशमे यत्नमाशु कुर्वीत बुद्धिमान् ।
ताम्याशु हि गुदं बद्ध्वा कुर्युर्बद्धगुदोदरम् ॥

(अ. ह. नि. 7/59)

महान्ति प्राणवर्ताश्छत्वा दहेत । छत्राकारण्यूर्ध्वविसृतानि क्षारसूत्रेण बद्ध्वा ।

(अ. सं. चि. 7/3)

वेगावरोध स्त्री पृष्ठयानमुत्कटुकासनम् यथास्वं दोषलं चान्नमर्शसः परिवर्जयेत् ।

रक्तार्शसामुपेक्षेत रक्तमादौ सुवदिभषक् ।

दुष्टासे निगृहीते तु शूलानाहावसृग्गदाः ॥

(चक्र. 5/111)

शुष्कार्शसां प्रलेपादिक्रिया तीक्ष्णा विधीयते ।

स्राविणां रक्तमालोक्य क्रिया कार्यासुपैतिकी ॥

(चक्र. 5/3)

द्विविधान्यर्शासि कानिचित् सहजानि, कानिचिज्जात स्योत्तरकालजानि ।

(च. चि. 14/5)

षडर्शासि भवन्ति वातपित्तकफशोणितसन्निपातैः सहजानि चेति ।

(सु. नि.)

चतुर्विधोऽर्शसां साधनोपायः तद्यथा क्षारोग्नि शस्त्रमिति ।

मृदु प्रसृतावगाढान्युच्छ्रितानि क्षारेण

(सु. अर्श चि.)

कुटज बिल्वचित्रकनागरातिविषाभयाधन्वयासक दारुहरिद्रा वचाचव्यानीति दशोमान्यर्शोघ्नानि भव

(च. सु. 4/12)

अर्शासीत्यधिमांसविकाराः ।

(च. चि. 14/5)

अर्शोरोगयतोऽर्शसुः ।

(अमरकोष)

दुर्नामकार्शसी ॥

(अमरकोष)

वलिकाकारे गुह्यस्थरोगभेदे ।

(वाचस्पत्यम्)

Add:- Agnikarma. (Introduction)
अग्निप्रशिक्षण-
methodology.

CHAPTER 6

APPLICATION OF KSHARA SOOTRA IN RECTAL PROLAPSE

Introduction

'Gudabhramsa' is the term derived from two words viz 'Guda' and 'Bhrmsa' denotes the displacement of an entity from its normal position. Susruta has described it under 'ksudra rogas'. Vagbhata has also described its management in the context of 'Atisara cikitsa' as a complication of it. In charak samhita it is mentioned under the vata vyadhis and in some other texts it is given as a disease occurring in rooksha and durbal deh people who strain and suffer from diarrhoea. In such people the guda i.e. rectum comes out and is known as gudabhramsha.

It can be correlated with rectal prolapse mentioned in modern science. Rectal prolapse is a condition in which the rectum falls downwards and turns inside out. Initially, the rectum stays inside the body, but as the condition worsens, it may protrude outside through the anus. There is often weakness of the anal muscles, which may result in leakage of mucus or stool.

Demographics

The overall incidence of rectal prolapse in the United States is approximately 4.2 per 1,000 people. The incidence of the disorder increases to 10 per 1,000 among patients older than 65. Most patients with rectal prolapse are women; the ratio of male-to-female patients is one in six.

Types

There are two types of rectal prolapse:

1) Incomplete -

Incomplete rectal prolapse involves the abnormal protrusion of rectal mucosa and submucosa through the anus. The length of such prolapse is never more than 3.75 cm. There is a partial overlap of this diagnosis with chronic prolapsed haemorrhoids, especially if part of the prolapse is hemorrhoids, and part of the tissue is rectal mucosa. If the protrusion of rectal mucosa is only partial, then this is called a partial mucosal prolapse.

2) Complete -

Involving both the rectal mucosa and the rectal wall - this is also called as Rectal Prolapse and Procidentia. Procidentia is a condition in which the rectum literally turns "inside out" and can extend as far as eight inches beyond the anus. Whether weak musculature of the pelvic floor and anal canal is a cause or an effect of this condition is still a matter of controversy. It is often accompanied by prolapse of uterus. A possible etiology is herniation of the cul-de-sac (a displacement of the rectum from its usually protected place in the hollow of the sacrum). In the horse, procidentia is a natural occurrence at the time of each bowel movement, but this is not true in humans.

Differentiating clinical feature of partial and complete rectal prolapse.

Partial rectal prolapse	Complete rectal prolapse
Length < 3.75 cm	Length > 3.75 cm
Common in children	Common in adult and old
Pink in colour	Red in colour
Radial folds	Concentric rings
Mucosa and submucosa descends	Complete thickness of wall of rectum

descends



**RADIAL FOLDS OF
MUCOSAL PROLAPSE**



**CONCENTRIC RINGS
OF PROCIDENTIA**



Appearance of partial and complete rectal prolapse

Who is at risk?

Patients with rectal prolapse are generally at extremes of age i.e. very young and elderly.

Common causes of Rectal Prolapse

Rectal prolapse is caused by weakening of the ligaments and muscles that hold the rectum in place. In most people with a prolapsed rectum, the anal sphincter muscle is weak. The exact cause of this weakening is unknown; however, rectal prolapse is usually associated with the following conditions:

- Advanced age
- Long-term diarrhoea (15%)
- Long-term straining during defecation
- Poor bowel habit, especially constipation -52%
- Neurological disorders (e.g., spinal cord injury)
- Female gender
- Deep pouch of Douglas
- Patulous anus
- Diastasis of levator ani muscle
- Decreased sacral curvature and decreased anal canal tone are the probable causes in infants.
- Operative procedure (e.g., hemorrhoidectomy, fistulectomy)
- Psychotic - 3% (John Cedric Goligher)
- Reduced ischiorectal fossa fat.
- Pregnancy and the stresses of childbirth
- Cystic fibrosis
- Chronic obstructive pulmonary disease COPD
- Whooping cough
- Multiple sclerosis
- Paralysis (Paraplegia)
- Long-term haemorrhoidal disease is frequently associated with mucosal prolapse that does not progress to complete rectal prolapse.

Aetiopathogenesis for partial rectal prolapse

- **Infants** - Infants lack a normal sacral curve, and have undeveloped resting anal tone.
- **Children** - Children presenting with rectal prolapse may have faulty bowel habits or may be associated episodes of diarrhoea, whooping cough, or malnutrition causing loss of ischiorectal fat or worms, particularly Trichuris trichiura may also play a part. Rectal prolapse in children may be a sign of Cystic Fibrosis.
- **Adults** - In adults, partial mucosal prolapse is correlated with 3rd degree hemorrhoids. In females partial or complete mucosal prolapse may be due to anal injury during delivery, or other pelvic operations.

Elderly patients may present with a history of chronic constipation or laxative abuse. They may have lax pelvic floor muscles or reduced anal sphincter tone. Excessive straining due to urethral obstruction from enlarged prostate or excessive coughing may be the cause.

May be a complication of surgery for fistula in ano or fissure where a large portion of muscle is divided or if excessive stretching of anal sphincter is done.

Aetiopathogenesis for complete rectal prolapse -

- Long history of difficulty with defaecation
- Laxity of anal sphincters
- Rectal intussusception
- Disordered functions of pelvic floor muscles
- Lack of rectal fixation i.e. weak muscles of pelvic floor
- Sliding hernia- there may be the peritoneal pouch on the anterior aspect of prolapse

Symptoms

The symptoms of a prolapsed rectum are similar to those of haemorrhoids; however, rectal prolapse originates higher in the body than haemorrhoids do. A person with a prolapsed rectum may feel tissue protruding from the anus and experience the following symptoms:

- Pain during bowel movements
- Mucus or blood discharge from the protruding tissue
- Faecal incontinence (inability to control bowel movements)
- Loss of urge to defecate (mostly with larger prolapses)
- Awareness of something protruding upon wiping

When a complete rectal prolapse occurs, the rectal wall protrudes and turns inside out forming concentric rings (procidentia), whereas if an incomplete prolapse occurs, only the rectal mucosa protrudes. At first, prolapse of the rectum may occur only at defecation and retract afterwards. Later, the protrusion may become more frequent and accompany sneezing and coughing, and may also occur at any exertion. Eventually protruding rectum may need to be replaced or may continually protrude. There have been reports of patients-although few, who have developed gangrene from this condition.

Examination and Tests

Rectal examination - If a patient's prolapse is intermittent, he will give a history of "something coming down", but there will be nothing to see. If he is an adult, pass a proctoscope and ask him to strain down. His anal mucosa will prolapse into the hollow of the proctoscope, and extend beyond his anus as it is withdrawn.

If his prolapse is complete, the whole thickness of his rectum slides out all round, sometimes for several centimetres. When a rectal examination is done, his anal sphincter feels weak. To find out if his prolapse is partial or complete, put the finger into his rectum, and feel the protruding ring of mucosa between the finger and thumb. If the two layers of mucosa are felt, it is incomplete; if more tissue than merely mucosa is felt, it is complete.

Diagnostic studies include rectal examination, sigmoidoscopy, and possibly a barium enema. Anorectal manometry may also be used to measure the strength of the muscles of the anus.

A defecogram (a test that evaluates bowel control) may help distinguish between a mucosal prolapse and a complete prolapse. Children with unexplained rectal prolapse should have a sweat chloride test done to evaluate for Cystic Fibrosis.

Cystic fibrosis-rectal prolapse in cystic fibrosis is probably related to pelvic floor disorder. Pelvi-perineal muscles, connective, adipose tissue and components of pelvic fascia may be involved.

Malnutrition in Cystic fibrosis affects the structure that usually support the rectum and coughing and straining during sticky and bulky bowel movements increase the pressure on the

rectum and pushing it out.

Sweat chloride test - A 3 milli ampere electric current is used to carry Pilocarpine into the skin of forearm and locally stimulate sweat glands. Wash arm with distilled water and collect the sweat into filter paper or gauze.

After 30-60 minute filter paper is removed, weighed and diluted in distilled water. At least 50 mg sweat should be collected. A chloridometer is used to analyze the chloride in samples.

In infants-upto 6 months-

Chloride level-

29 mmol/litre

cystic fibrosis unlikely

30-59 mmol/litre

intermediate cystic fibrosis is possible

>60 mmol/litre

cystic fibrosis is likely to be diagnosed.

>6 months of age-

39 mmol/litre

cystic fibrosis unlikely

40-59 mmol/litre

intermediate cystic fibrosis is possible

>60 mmol/litre

cystic fibrosis is likely to be diagnosed

Differential diagnosis-

Prolapse of the rectum has to be differentiated from

Large prolapsed hemorrhoids,

Polyps,

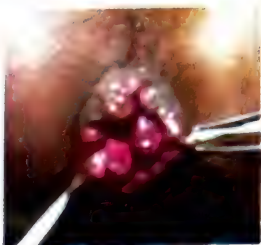
Tumors, Intussusception

It is also important to distinguish between mucosal (incomplete) and complete prolapse.

In a prolapse one cannot enter the anal canal at any point, but can pass the finger between an intussusception, or a rectal polyp, and the anal wall.

Differential diagnosis

Diseases	Differentiating features from rectal prolapse
Prolapsed haemorrhoids	Lobular, definite sulcus or groove is present between the masses. Plum or blue coloured.
Large rectal polypoid lesion prolapse	O/E after reduction – mobile, can be separated from lower part of rectum by digital Pressure. Proctosigmoidoscopy will clarify diagnosis.



Color difference between pile and prolapse

Treatment

Conservative Treatment

Bulking agents (such as bran or psyllium), stool softeners, and suppositories or enemas used for these purposes. Stool softeners, such as sodium docusate (Colace) or calcium docusate (Surfak), may be used to reduce pain and straining during bowel movements.

Avoid straining during defaecation

Nutritious diet

Digital repositioning of the partially prolapsed rectum by the help of lubricated index finger or **MANUAL REPLACEMENT AND STRAPPING**. Using a glove and xylocaine jelly to replace the prolapse manually.

Medical treatment –

Oral - Changari ghrita

Local - Mushak taila

Musaka taila (Su.ci 20/62-63) – Rat (whose intestine has been removed) and Vrahat panchamoola are treated with milk. Tailapaka is performed with this milk and some Vataha drugs. This is used by local as well as oral routes.

Changeri ghrata (A.H.Ci 9/48) – Ghritapaka should be performed with milk, Changari Kola, Curd and ghee; all one Prastha and Sunthi one Kudava. It should be taken orally.

Parasurgical

Strapping

Sclerotherapy

Kshara sootra karma

Strapping –

1. Strap the buttocks securely together with a large gauze pad up against the anus. Apply a large square to each buttock. Join these with a 2.5 cm transverse strip, so as to close the buttocks, and leave this strip on during defaecation. Afterwards, remove it, clean the buttocks, and replace it with a fresh strip.

Procidentia in children usually can be corrected by conservative measures. These include a nutritious diet, avoiding straining at stool, and immediate replacement of the bowel at each protrusion to avoid swelling and possible difficulty in reduction. Children frequently “outgrow” the disease as the natural curve of the sacrum becomes more concave, and surgery may not be needed.

GALLOWS TRACTION is controversial. Some surgeons don't use strapping and proceed immediately to gallows traction. Suspend the child in the gallows position for a few days to two weeks.

Sclerotherapy

Injections of sclerosing agents such as 5% phenol in almond oil in the hollow of the sacrum have helped many patients with procidentia. This is tried in children only if digital repositioning fails for 6 weeks. This can also be tried in adults.

Technique

The base and apex of prolapsed is injected circularly and the tip of the needle should reach the submucosa. 10 ml of such solution may be injected in one sitting. A sterile aseptic inflammation following the injection leads to fibrosis and the

mucous membrane becomes fixed to the muscular coat and is drawn in.

Technique of using kshara sootra in gudabhamsha

Poorva Karma

Written informed consent of the patient and attendant is taken.

Anti-tetanus prophylaxis is given.

Xylocaine sensitivity test is done.

Preparation of operative field is done by means of cleaning, shaving and painting.

First soap water enema or peglac solution is given 12 hours prior to operation.

Patient is kept nil orally for 12 hours before operation.

Another soap water enema is given in the morning of operation day.

Premedication of the patient is done as and when required $\frac{1}{2}$ hour before the procedure.

Injection Promethazine is given to make the patient calm i.e. for sedation without depression.

Pradhana Karma

Position of the patient -

A simple lithotomy position is required to carry out the minimum invasive technique - The Kshara Sootra Karma to manage the gudabhamsha or prolapse can be used in place of Kshara sootra.

Preparation of the operative field -

The conventional rituals are observed to prepare the operative field by scrubbing, cleansing and painting with antiseptic solutions followed by draping of the part by sterile linens.

Anaesthesia -

Haemorrhoidal block

1% lignocaine with adr. Hcl is given in the dose of 5-7mg/kg body weight in fan shaped direction about 1cm below and above the anal orifice in midline using 21 G needle.

Transcutaneous pudendal nerve block

The ischial tuberosity is taken as the landmark to perform transcutaneous pudendal nerve block. The tuberosity is palpated subcutaneously through the buttock and 7.5 cm long needle (21G) is introduced into the pudendal canal along the medial side of the tuberosity. The pudendal canal lies about 1 inch (2.5 cm) deep to the free surface of the ischial tuberosity. The local anesthetic 5 ml of 1% is then infiltrated around each side of the pudendal nerve (Rt & Lt.).

Digital rectal examination is performed once again to exclude any specific pathology.

The proctosigmoidoscopy is also carried out, if it is required.

Method of kshara sootra ligation in complete rectal prolapse -

Procedure -

Step 1 - Incision

A short incision is made in midline, anteriorly and posteriorly at 12 and 6 o'clock positions, about 1.25 cm from the anal verge.

Step 2 - Insertion of needle

Two large bore hollow needles are taken (spinal needles of 16 G). The needle is inserted on left side through the posterior wound in the subcutaneous plane, in such a way as to encircle the

anus 1 cm from the anal orifice, until its point or tip emerges from the anterior wound. Similarly the other needle is inserted from right side.

Step 3 – Application of kshara sootra

The kshara sootra is introduced through the opening of the spinal needles at 12 o' clock. Spinal needles are now withdrawn and the two ends of kshara sootra are ligated at 6 o' clock position.

Step 4 – Tying of the knot

The index finger is introduced into the anal canal and kshara sootra is tightened around the finger, so that the anus allows the entry of one finger. Now the finger is withdrawn and the ends of the kshara sootra are clipped short.

Step 5 – Burial of the knot

The kshara sootra is rotated a little bit to bury the knot such that it lies on the lateral side in the subcutaneous tissue, away from the site of incision.

Step 6 – Closure of the incision

The incisions given are closed with single suture at the end and antiseptic dressing is applied. T-bandage is given to hold the lay on dressing in position.

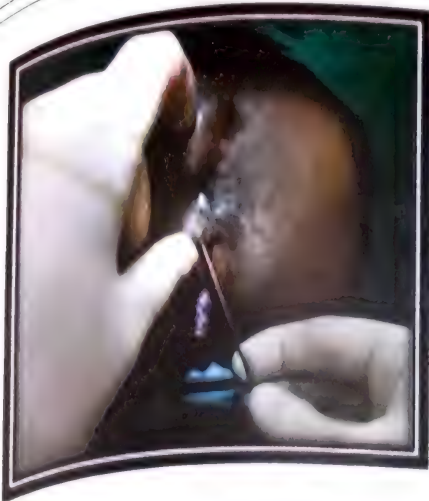


Haemorrhoidal block



Incision





Insertion of spinal needles



Application of Sootra



Tying of knot

Points to be kept in mind-

- 1) Getting the tension of the kshara sootra right, is difficult. If it is too tight, it will interfere

with defaecation, and cause faecal impaction, or the Kshara Sootra may cut out. If it is loose, it will not cure prolapse.

- 2) Make sure that patient can pass stools normally before discharge. The major complications are breakage of the kshara sootra, and difficulty in passing even a soft stool, if the suture is too tight. Advise high-fibre diet.
- (3) The main complication is that the wound may get infected and result in a discharging sinus or abscess formation.
- (4) Kshara sootra is only suitable in debilitated adult patients unfit for surgery.

Method of kshara sootra ligation in partial or mucosal prolapse—

PROCEDURE

Step - 1 Revelation of the mucosal prolapse

Step - 2 Holding of the prolapsed mass

After visualizing the rectal prolapse carefully, it is held with the help of babcock's tissue forceps with slight traction. The traction on prolapse should not be huge as it may cause tear the prolapsed mass.

Step - 3 Transfixation of the prolapsed mass

After holding the prolapsed mass, its base is transfixed using Kshara sootra on a round body needle.

The transfixation of the base of the prolapse is done with the help of kshara sootra on two needles.

The first needle is pierced through the base of the prolapse at a distance $1/3^{\text{rd}}$ from one end.

In the same way, the second needle is also pierced through the base of the prolapse at distance of $1/3^{\text{rd}}$ from the other end.

Now kshara sootra is cut proximal to the needles.

Step - 4 Ligation of the base of prolapse

After proper transfixation of the base, the free ends of the Kshara sootra are ligated, two knots on the two sides and one knot at the centre. The Kshara sootra above the knot is cut leaving 2-3 cm above it.

Consequently sterile gauze piece soaked with Jatyadi taila is placed inside the anal canal to safeguard from corrosive action of extra Kshara and further aid in wound healing thereafter. T-bandage is applied to secure dressing in position.

Paschata Karma

- Simple non narcotic analgesics whenever required.
- Patient kept nil orally for 3 hours.
- Regular monitoring for haemorrhage is done without disturbing the anal dressing.

Post operative care and prescription

- Dressing is removed next morning after that ushnodaka avaghana is given.
- Patient is instructed not to strain during defaecation and is advised mool bandh.
- Instillation of jatyadi taila into the anal canal with the help of No. 6 rubber catheter attached with a 5ml of syringe is done.

- Triphala gugulu - 2 tablets x BD
- Aamalaki churna - 4 gm x BD
- Isabghol powder - 2 TSF x HS

Panchsakara churan - 2 TSF x HS

Other laxative, if required.

ASD daily till discharge of the patient with jatayadi taila.

Diet

Light bland diet, leafy vegetables, milk, cream, curd, lassi etc. plenty of water orally. Such a regimen is to be followed for 4 weeks.

Surgical treatment

Many operations have been designed, can be grouped as,

- 1) Narrowing of anal orifice
- 2) Obliteration of the peritoneal pouch of Douglas
- 3) Restoration of the pelvic floor
- 4) Resection of bowel
- 4) Transabdominal
- Perineal
- Transsacral

- 5) Suspension or fixation of the rectum
 - To sacrum
 - To pubis
 - To other structures

- 6) Combination of the two or more of the above

In adults with procidentia who are good-risk patients, abdominal surgery is usually indicated. There are several surgical approaches. A relatively simple operation fixes the rectum in the hollow of the sacrum. Another method is resection and low anastomosis of the sigmoid to the rectum. In patients unable to withstand an abdominal operation, amputation and anastomosis can be performed by a perineal approach.

Surgical treatment can be divided into 2 categories according to the approach used to repair the rectal prolapse: abdominal procedures and perineal procedures. The choice of abdominal versus perineal procedure is mainly dictated by the patient's age and comorbidities. The choice of procedure is also dictated by the presence or absence of constipation. Children are treated with linear cauterization.

Preoperative care

Ensure a full mechanical and antibiotic bowel preparation before surgery, regardless of the type of procedure being planned. Perioperative intravenous antibiotics are often used, especially if a foreign material is being implanted.

Intraoperative details

Abdominal procedures

These procedures are typically performed in younger, healthier patients whose life expectancy is longer.

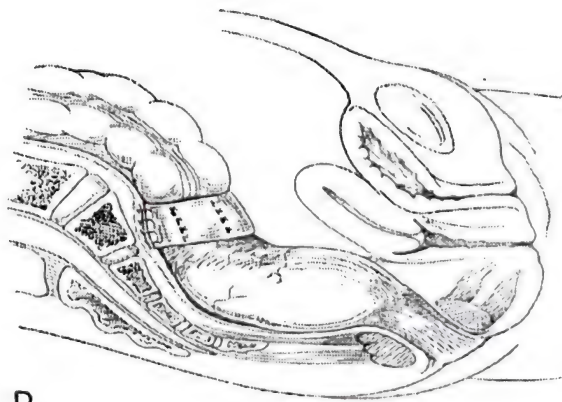
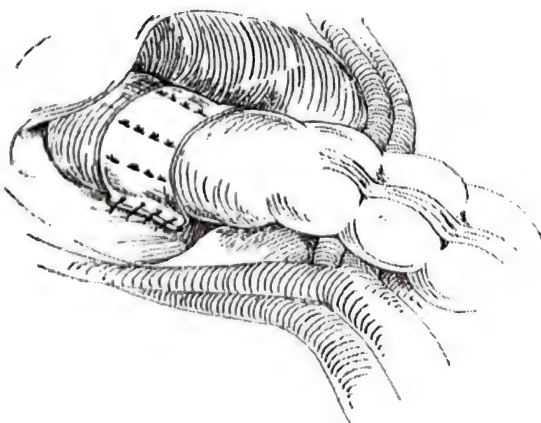
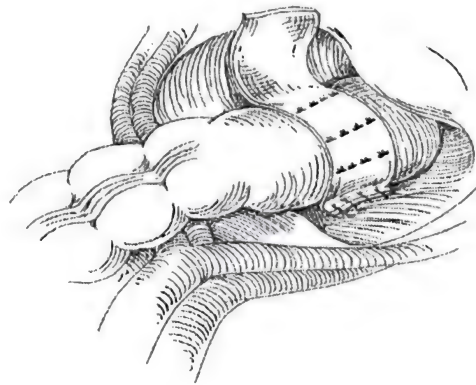
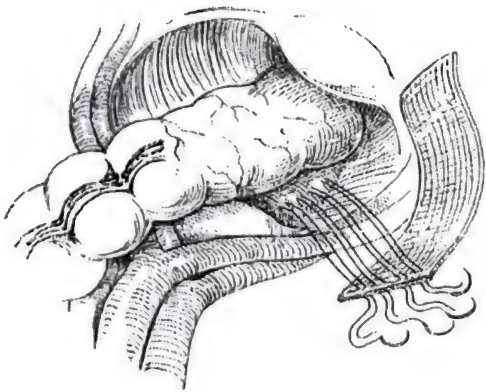
Anterior resection

- Patients with rectal prolapse and constipation often have a redundant colon, and resection of it is thought to improve constipation and cure rectal prolapse. In an anterior resection for rectal prolapse, the rectum is mobilized to the level of the lateral ligaments, and the redundant colon (sigmoid) is resected. The left colon is

then anastomosed to the top of the rectum. This is performed without laxity in the colon so that the rectum is held in place and can no longer prolapse. Few perform this procedure because it is not thought to address anatomic abnormalities such as poor rectal fixation.

Marlex rectopexy

- In a Marlex rectopexy (Ripstein procedure), the entire rectum is mobilized down to the coccyx posteriorly, the lateral ligaments laterally, and the anterior cul-de-sac anteriorly. The Marlex rectopexy is illustrated in the image below. A nonabsorbable material, such as Marlex mesh or an Ivalon sponge, is then fixed to the presacral fascia. The rectum is then placed on tension, and the material is partially wrapped around the rectum to keep it in position. The anterior wall of the rectum is not covered with the sponge or mesh in order to prevent a circumferential obstruction.
- The peritoneal reflections are then closed to cover the foreign body. The Marlex mesh or sponge causes an inflammatory reaction that scars and fixes the rectum into place. Do not perform this procedure on patients who have a large component of constipation or a very redundant sigmoid colon because the symptoms are likely to worsen. If the rectum is inadvertently entered during mobilization the foreign material should not be implanted because of risk of infection.



Ripstein Procedure (Anterior sling rectopexy)

Suture rectopexy

This operation is essentially the same as a Marlex rectopexy except that the rectum is fixed to the presacral fascia with suture as opposed to mesh or an Ivalon sponge.

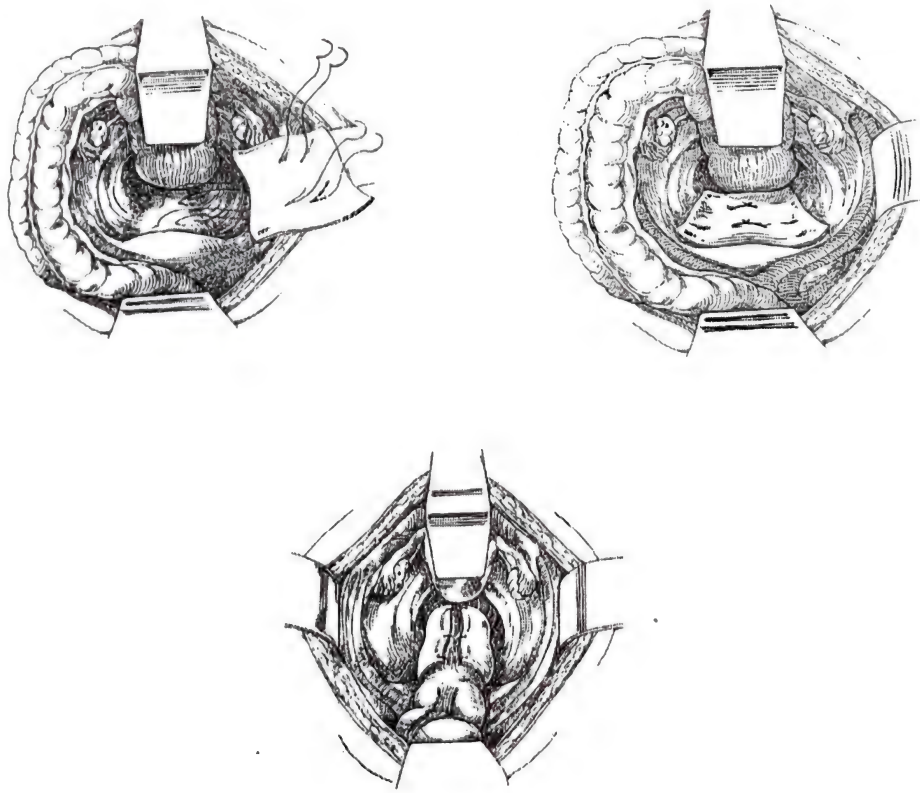
Resection rectopexy

Resection rectopexy (Frykman Goldberg procedure) is a combination of the anterior resection and the Marlex rectopexy and is a good option for patients with a significant component of constipation. The rectum is completely mobilized to the coccyx posteriorly, to the lateral ligaments laterally (some surgeons divide the lateral ligaments), and to the cul-de-sac anteriorly.

The redundant sigmoid colon is then resected, and the remaining colon is anastomosed to the top of the rectum. The lateral ligaments or the rectal fascia are then sutured to the presacral fascia with the rectum on tension, which keeps the rectum in place and prevents further rectal prolapse. The rectopexy is accomplished with suture instead of nonabsorbable mesh because the bowel is opened for the anastomosis and the mesh may become contaminated.

Wells operation (Posterior sling rectopexy)

Rectum is mobilized posteriorly down to the levator ani. Anterior mobilization of the rectum is also performed. A piece of Ivalon is then placed in the pelvis, sutured to the presacral fascia with nonabsorbable sutures. Wrapped around the rectum which has been retracted cephalad. Sponge is then sutured to the rectum such that only three-fourths of the rectum is wrapped.



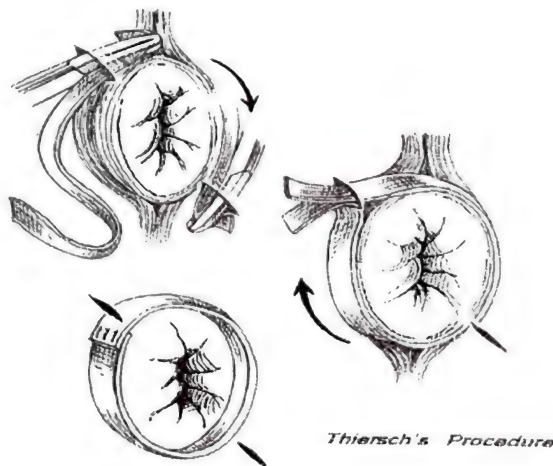
Wells operation (Posterior sling rectopexy)

Perineal procedures

Perineal procedures have a higher recurrence rate but a lower morbidity rate and are often performed in the elderly population or in patients who have a contraindication to general anesthetic.

Anal encirclement

With anal encirclement (Thiersch wire), a nonabsorbable band is placed subcutaneously around the anus. The purpose of this procedure is to keep the rectum from prolapsing by stricting the size of the anal lumen. Although initially described using a wire, other materials (eg, silastic tubing, nonabsorbable suture) have replaced it. The therapy is effective in mechanically preventing the rectum from prolapsing, but it does not treat the underlying disorder.

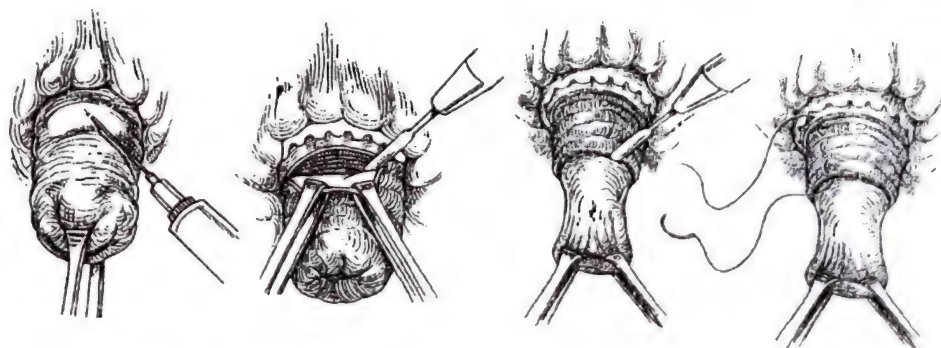


INDICATIONS

- (1) Children in whom strapping and/or gallows traction have failed.
- (2) Elderly debilitated adults whose life has been made miserable by rectal prolapse

Delorme mucosal sleeve resection

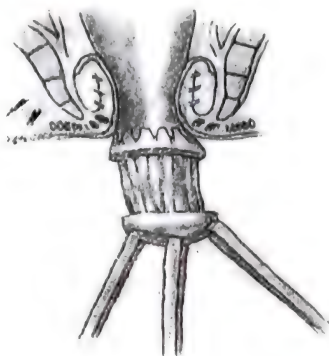
A circumferential incision is made through the mucosa of the prolapsed rectum above the dentate line; using electrocautery, the mucosa is stripped from the rectum to the apex of the prolapse and excised. The denuded prolapsed muscle is then pleated with a suture and reefed up like an accordion. The transected edges of the mucosa are then sutured together. This procedure is often used for small prolapses but may also be used for large ones.



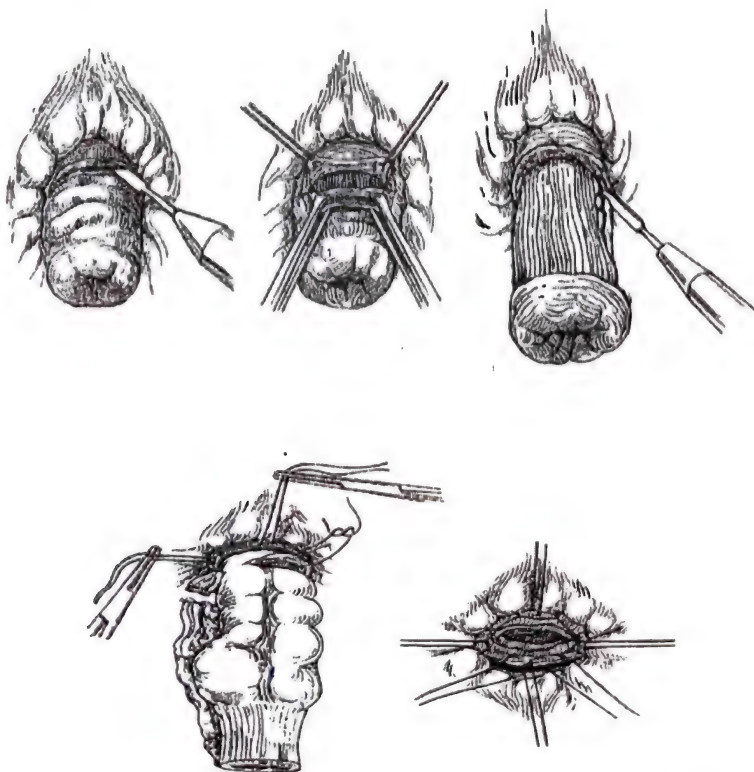
Delorme Procedure (Rectal mucosal sleeve resection)

Altemeier perineal rectosigmoidectomy

A full-thickness circumferential incision is made in the prolapsed rectum at about 1-2 cm from the dentate line. The hernia sac is then entered, and the prolapse is delivered. The mesentery of the prolapsed bowel is serially ligated until no further redundant bowel can be pulled down. The bowel is transected and hand sewn to the distal anal canal or stapled using a circular stapler. Before anastomosis, some surgeons plicate the levator ani muscles anteriorly, which may help to improve the continence.



This operation is relatively safe and effective in frail, older patients, with postoperative morbidity being low. However, the recurrence rate of prolapse following the procedure was not considered to be negligible, and the surgery was found to be unpredictable in terms of restoring continence.



Perineal Rectosigmoidectomy (Altemeier procedure)

Surgery for mucosal prolapse

Mucosal prolapse is treated with a haemorrhoidectomy. Excision of the prolapsed mucosa is performed only if the partial prolapsed has involved only a part of circumference. The base of the prolapsed is ligated with Goodsall's ligature and the redundant mucosa excised. This technique may be adopted in case of partial prolapse associated with 3rd degree haemorrhoids.

Postoperative Details

Abdominal procedures

Postoperatively, patients usually have an ileus and incisional pain. Intravenous fluids are maintained until liquids are started with the return of bowel function or earlier, depending on whether an anastomosis has been performed. As bowel function improves, diet can be advanced. Patients with an anastomosis are maintained on a low-fiber diet for 2-3 weeks and then started on fiber supplementation to help prevent the return of constipation and straining. Patients without an anastomosis can be started on a high-fiber diet sooner. A Foley's catheter is placed perioperatively and is left in place for several days because the rectal dissection can inhibit bladder function. The length of hospital stay averages 3-7 days and is usually dependent on the return of bowel function and the control of incisional pain.

Perineal procedures

Patients who have had perineal procedures do well postoperatively with minimal pain and a short hospital stay. Initially, patients receive nothing by mouth for approximately 12-24 hours. After this period, liquids are instituted, and patients are rapidly advanced to a regular diet. Bowel function returns quickly because there is no abdominal incision, and patients can often be discharged 24-72 hours after the procedure.

Complications

Other complications, such as myocardial infarction, pulmonary embolus, deep vein thrombosis, and hernia, can occur but are not unique to these types of procedures.

Infection

The most common source of infection is from inadvertent injury to the rectum during mobilization in abdominal procedures. Unrecognized, this could lead to leak of intestinal contents with pelvic abscess and sepsis.

Bleeding

Bleeding most commonly occurs in 2 situations. First, the presacral veins can be torn during abdominal procedures, when mesh or the rectum is directly fixed to the presacral fascia. This can lead to a presacral hematoma or to torrential bleeding. This bleeding can be difficult to control because the veins exit directly from the bone. Dissection in the presacral space often increases bleeding and should be avoided.

⌞ The second common situation for bleeding occurs during the mucosal stripping in the Delorme procedure or from wound separation postoperatively.

Bowel injury

Bowel injury most frequently occurs during mobilization of the rectum. If it is recognized, the injury can usually be repaired without need for intestinal diversion. Foreign material should not be implanted if the bowel is injured. Unrecognized injury can lead to abscess formation and pelvic sepsis.

Anastomotic leak

All procedures involving a resection carry a risk of anastomotic leak. Abdominal procedures complicated by a leak require reexploration. If the leak is small and contamination in the pelvis is limited, the anastomosis can be revised and protected with a diverting loop ileostomy. If the leak is large with significant dehiscence of the anastomosis, the patient is often best served with a Hartman procedure (colostomy with rectal stump). Often, pelvic sepsis makes further dissection in the pelvis challenging, and revising or performing a new anastomosis can be very difficult. Anastomotic leak can also occur after perineal rectosigmoidectomy. Despite the fact that this is a very low anastomosis, leak is rare. The infection is localized and pelvic sepsis is rare when leak occurs after this procedure.

Bladder and sexual function alterations

The pelvic sympathetic and parasympathetic nerves run along the rectum; if dissection is not carried out in the proper plane, injury can occur, leading to bladder dysfunction, impotence, and/or retrograde ejaculation. This is an important consideration when trying to decide which procedure to perform, especially in men

Constipation/outlet obstruction

Perineal procedures and anterior resection have a low risk of outlet obstruction. Abdominal procedures that tack the rectum to the sacrum can cause outlet obstruction if the rectum is wrapped circumferentially, often requiring release of the fixation to treat the problem.

~~High or Supralevator Dissection / Separation & Explanation.~~

प्रवाहणातिसाराभ्यां निर्गच्छति गुदं बहिः

रूक्षदुर्बलदेहस्य तं गुदभ्रंशमादिशोत् ।

(सु. नि. 13/63)

गुदभ्रंशे गुदस्विन्नं स्नेहाभ्युक्तं प्रवेशयेत् ।

कारयेद् गोफणबणाबन्धं मध्यच्छिद्रेण चर्मणा ।

विनिर्गमार्थं वायेश्च स्वेदयेच्च मुहुर्मुहुः ॥

(सू. चि. 20/61)

चांगेरी घृत

गुदनिःसरणे शूले पानमम्लस्य सर्पिषः ।

प्रशस्यते निरामाणामयवाडस्यनुवासनम् ।

चांडेरी कोलदध्यम्लनागरक्षारसंयुतम् ।

घृतमुत्कथितं पेयं गुदभ्रंशरुजापहम् ॥

(च०चि० 19/42-43)

मूषक तेल

गुदभ्रंशे गुद स्विन्न स्नेहाभ्युक्तं प्रवेशयेत् ।

कारयेद् गोफणाबन्धं मध्यच्छिद्रेण चर्मणा ।

विनिर्गमार्थं वायोश्च स्वेदयेच्च मुहुर्मुहुः ।

क्षीरे महत्पञ्चमूलं मूषिकां चानवर्जिताम् ।

पक्त्वा तस्मिन् पचेतैलं वातघ्नौषधसंयुतम्

गुदभ्रंशमिदं कृच्छं पानाभ्यङ्गात् प्रसाधयेत् ॥

(सु०चि० 21/61-63)

CHAPTER-7

APPLICATION OF KSHARA SOOTRA IN FISSURE-IN-ANO

Introduction

In classical literature of Ayurveda a number of conditions have been described in relation to Guda. It is surprising to note that although anal fissure is one of the common ailments of the ano rectal area, still it has escaped the notice of ancient scientists. However, a detailed exploration of literature suggests some words, which clinically may resemble these entities. The clinicians have recently coined a word Guda-Vidara to represent this condition but this word does not have any origin in the original classics of Ayurveda. Parikartika is a word which has been referred to in earlier three samhitas of Ayurveda not as separate entity, but as a complication of other diseases pertaining to colo-rectal and oesophageal regions and their therapies.

Ancient literatures including Vedas have a rich description of various diseases and their management. But 'parikartika' is not described in Vedas and other authors also have paid no attention to its description as compared to other diseases. This may be attributed to excellent general condition of health, hygiene and natural habit of ancient people. Perhaps they had regular dietary and bowel habits and may not be indulged in consumption of chillies and spices in their diets.

Definition -

Parikartika denotes cutting or cutting pain all around.

According to Dalhana, the commentator of Sushruta samhita, there is cutting and tearing pain everywhere.

Guda Parikartika has been correlated with fissure in ano by many authors..

Definition :-

- i. The term fissure denotes a crack/split/cleft/groove
- ii. Anal fissure has been described as an acute superficial break in the continuity of anoderm usually in post midline of anal margin.
- iii. The squamous mucosa of lower half of anal canal is prone to superficial ulceration, which presents clinically as an anal fissure. It is a linear ulcer, usually situated in posterior commissure of canal (Devis Christopher)
- iv. This is a common disease of anus which causes an amount of suffering out of all proportion to the size of lesion. A fissure consists essentially of a crack in skin line part of anal canal which often shows a considerable reluctance to heal (goligher)
- v. Examination of lower half of anal canal by separation of buttocks to open up the perianal area will reveal presence of any simple anal fissure as it is located below the dentate line and is always confined to the anoderm in mid posterior position or mid anterior position.

Synonyms -

- i. Anal ulcer
- ii. Anal fissure
- iii. Ulcer-in-ano
- iv. Chronic ulcer

v. Faecal ulcer

Age

It is usually encountered in young or middle age but sometimes seen at infancy and early childhood (Bennet). Hamilton says that is not uncommon in children and frequently the diagnosis is missed. Bacon has advocated that fissures are more common in meridian of life.

Sex

Ant. Fissure is more common in women than men and accounts for 40% in women contrasted with 10% in men. Posterior fissure is 90% in men and 60% in women.

Location -

It is found mostly on midline posteriorly and may be midline anterior (Bailey and love). Exceptionally it is found elsewhere on the circumference of the anus.

Bacon says anal ulcer is usually single, when multiple it is likely to be of tuberculous syphilitic or chancroidal origin.

Nidana- Aetiology

Other classification of aetiology is as below -

1. Vyadhi nimittaja-

That which is produced after a disease or during the diseased stage. Charak has described the disease parikartika in the chapter of Atisar-Vyapada where he has described the clinical features of vataja-atisara. According to him there is scanty hard stool with froth and sound gripping and cutting pain in Guda and prolapse of rectum. Further he has mentioned parikartika, while describing treatment of jwara. In fever there is generalized dehydration so that the bowel are not clear and passage of even a single hard motion is enough to result into fissure and create other complication.

2. Vaidya Nimittaja -

There are some diseases/complications which are produced by inexperienced physician. Parikartika is one of such disease produced by wrong conduction of therapy. Sushruta has described that parikartika mostly develops after a wrongful conduction of using the process of medication via rectal route by a rough and thick vasti netra. Charak has also considered the wrongful use of vasti netra as the cause of parikartika. He says that if contents of vasti which is unctuous, acute and if high dose is given to a person of mild bowel or suffering from slight morbidity causing precipitous elimination of faecal matter produces parikartika.

According to Davis main aetiology is infection.

Boyd says that there are only two reasons for fissure -

- Trauma by passage of thick column of hard stool.
- Loss of elasticity due to chronic infection and fibrosis.

He says 95% lesions are situated in posterior commissure due to fibers of external sphincter (which encircle the anus) fuse much more completely in front than behind. So the mucosa of posterior aspect of anal canal is less strongly supported and more easily torn.

Mahadevan says that the main cause is trauma due to passage of hard stool and over distension of anal canal by it. The fibers of sphincter ani externus decussate on their way to get attached to coccyx leaving a weak spot in posterior midline. In a person who takes laxatives, purgatives or has an irritable colon, the absence of normal stretching by solid faecal mass results in fibrous contracture of sphincter. In such condition, a tear will easily occur when a hard

mass is passed.

Bailey and Love also added that the anterior anal fissure is more common in women particularly who have children because of lack of support of anal mucus membrane by a damaged aged pelvic floor. They also said that incorrectly performed haemorrhoids surgery, in which too much skin is removed resulting into anal stenosis is also a cause for fissure.

It has also been hypothesized that failure to heal is secondary to poor perfusion of the anoderm in posterior midline. According to this hypothesis, posterior midline ischemia is the result of arterial anatomy and internal anal sphincter hypertonicity.

Angiographic and anatomical studies of inferior rectal artery shows compromised blood flow in posterior midline. Laser Doppler flowmetry demonstrate lower perfusion in posterior midline and to a lesser extent in anterior midline. There is manometric evidence of sustained hypertonicity of internal anal sphincter and an inverse correlation has been demonstrated between anal pressure and anodermal blood flow, the higher anal pressure and the lower blood flow.

S. Das has given 4 reasons for predominance of posterior fissure.....

- i. Posterior angulation of anal canal.
- ii. Relative fixation of anal canal posteriorly
- iii. Divergence of fibers of external sphincter posteriorly
- iv. The elliptical shape of anal canal.

So the causes of anal fissure are as follows :-

- i. Passage of hard stool
- ii. Inflammatory bowel disease
- iii. Previous anal surgery when too much skin has been removed during surgery and anal stenosis has occurred.
- iv. Parturition
- v. Persons taking laxatives or purgatives for long.
- vi. Trauma by nozzle of enema, speculum etc.
- vii. HIV, TB, STD, Syphilis, leukemia

Bheda- Classification -

Description of the classification according to the doshas is given in Kashyap Samhita only, in the chapter of Garbhini Chikitsa.

3 types of parikartika have been mentioned in Kashyapa samhita

- i. Vatika
- ii. Paittika
- iii. Shleshmika

This classification is based mainly on the character of pain.

In modern science, for all purposes, fissure can be classified into 2 groups...

- i. Primary or idiopathic
- ii. Secondary to other diseases or surgery

Fissure can also be classified as

- i. Acute
- ii. Chronic

Acute fissure -

It is an ulcer, often a more crack in the epithelial surface but may cause severe pain and spasm. It has a history of less than 6 weeks.

Chronic fissure -

It has thickened margin, sentinel tag, hypertrophied papilla and its base has fibers of internal sphincter. It has a history of more than 6 weeks.

Pathology -

The situation of fissure in vertical axis of anal canal and nearly always in posterior mid-line of anal canal is quite constant. It lies in cutaneous portion of anal lining between the level of anal valve and anal orifice. In this portion, it is situated superficial to the lower most quarter or 1/3 of the internal sphincter. Initially, it is separated from sphincter by thin layer of longitudinal muscle spread on inner surface of latter but eventually it may deepen down to the sphincter so as to expose its circular fibers in its floor.

Goligher says that it bears no direct relation to external sphincter.

Miles (1919-1939) said that pale tissue exposed by a chronic fissure was not sphincter but a condensation of fibrous tissue in submucous space of anal canal forming a ring of fibrosis - pecten band.

The work of Eisenhammer (1953), Goligher, Leacock and Brossy (1955), and Thomson (1956) leaves no doubt that the underlying tissue in fissure is internal sphincter and the structure identified as pecten band by Miles, is the prominent lower edge of this sphincter and the external sphincter is not in direct contact with fissure at any stage.

Secondary changes -

- i. **Sentinel tag** - The swelling of skin at lower end of fissure, actually at the level of anal orifice, so that it forms a tag like swelling called sentinel tag, due to low grade infection and lymphatic edema. After the tag has undergone very inflamed, tense and edematous appearance, it may go into fibrosis later on and persist as a permanent skin tag even after healing of fissure.
- ii. **Hypertrophied papilla** - the anal valve immediately above the fissure form hypertrophied anal papilla or polyp.
- iii. In a long standing case, the development of fibrous induration in the lateral edges of fissure.
- iv. At any stage suppuration may occur and form perianal abscess which may burst externally to form fistula. So, an anal fissure should always be thought of as the commonest cause of a median low dorsal fistula.

Pathogenesis -

According to Devis (1960) - infectious material gain entrance to anal tissue and infection localizes superficially in subcutaneous space inviting dissolution of overlying anal skin. The resulting defect is an ulcer.

Nesselrod (1970) has given anal infection as the main cause of anal fissure which occurs in 3 stages -

Stage I - The infectious material is trapped in one or more anal crypts and is carried to anal glands via anal ducts. Thus, the crypts serve as funnels via which infectious material from intestinal tract enters anal ducts and glands.

Stage II - It is initiated by invasion of surrounding tissues by infectious material. This can

occur directly due to breaks in the continuity of gland or duct or indirectly via vascular lymphatic supply.

Stage III - When infectious material localizes superficially in subcutaneous tissue of anal canal, usually posterior, a dissolution of anal skin results in the formation of ulcer of anal known as anal fissure.

Rupam- (Clinical features) -

The prodromal symptoms in the words of Sushruta is, pain of sharp cutting nature. Guda. Further he described in chapter Vamana-Virechana Vyapada, there is sort of cutting pain, sawing pain in anus, penis, umbilical region and neck of urinary bladder. The emission of flatus is arrested, the vayu is incarcerated in abdomen, relish for the food vanishes.

Charak has fully supported Sushruta's description. He has described pain like cutting in Guda and also pain in groin, flanks and sacral area and during defecation, the prolapse of rectum and presence of faecolith.

Further he has quoted that the symptoms are pricking pain in sacrum, groins, below naval area and passage of scanty stools and constipation in patient suffering from parikartil.

1. Pain -

Acute anal pain is associated with and following passage of stool. The pain starts with act of defecation and is described as sharp, cutting or tearing which subsequently continues as a burning or gnawing discomfort for several hours following stool.

During defecation the anal tissues are stretched and the margins of anal ulcer are separated. The first victim of anal fissure is the anal skin of anal canal. The anal skin has somatic sensory nerve supply which conveys the message from surface of ulcer to spinal marrow and the motor branch conveys motor signal from spinal marrow to sphincter muscle, thus the irritation generated at the ulcer is conveyed to spinal marrow thereby producing reflected effects on sphincters, leading to painful contractions which continues until the muscle becomes fatigued and at that time patient feels relief. So the muscle spasm causes pain and fatigue results in relief.

2. Bleeding - Usually slight but occasionally more profuse and may cause anaemia.

3. Swelling/sentinel tag. - A tag like swelling called **sentinal tag** is due to low grade infection and lymphatic edema. It seems to stand guard as it is present at distal border of lesion. Mahadevan says that sometimes an anal valve is torn down by scabulous mass resulting in fissure with a sentinel tag at its end

4. Discharge and pruritis - If there is much discharge it increases the moisture of perianal skin with resulting pruritus around the anus.

5. Urinary symptoms - Some patients may develop disturbances of micturition by mechanical mechanism and complain of dysuria or retention or increased frequency.

6. Bowel habit - The patient makes out that pain is initiated or aggravated by defecation there is tendency to defer going to stool, thereby normal bowel habit is gradually taken over by constipation.

7. Nervous manifestation - There may be abdominal discomfort, digestive disturbances, headache, irritability and extreme nervousness and may be marked changes in the personality.

Differential diagnosis -

1. Anal abrasion and pruritis with superficial cracks - Usually found in infants and children which heal easily under proper anal hygiene. In pruritis ani several cracks extend

radially from anus are found. Both of these conditions are limited to superficial layer of skin and the characteristic features of fissure such as spasm of sphincter are absent.

2. **Ulcerative colitis** – In this, ulcers occur in large intestine and fissure is its rectal manifestation which is very painful and deep and very septic so that readily lead to abscess and fistula formation. They are often situated in midline and may be multiple. Patient may have diarrhoea and general disturbances also.

3. **Crohn's disease** – Anal fissures found in it appear grosser than idiopathic fissures and more similar to that seen in ulcerative colitis but more extensive. Histological examination of the tissue confirms diagnosis.

4. **Coccydynia** – There may be H/o injury or fracture of coccyx, which causes contraction of levator ani and coccydynia may be ^{h/o of} unknown etiology. Rectal examination reveals local tenderness and occasionally deformity.

5. **Ectropion** – Growth of rectal mucosa distal to level of dentate, where a portion of wall of canal becomes lined by rectal mucous membrane instead of anal skin and careful examination reveals smooth, velvety appearance of mucosa. There is no pain or spasm but constant mucoid discharge results in soggy, macerated anal and perianal skin.

6. **Proctalgia fugax** – Intermittent cramp like pain in rectum, usually at night, is its characteristic feature. It lasts only a few minutes and may follow sudden explosive bowel action of ejaculation. It is usually found in young patients suffering from anxiety or stress. It may be due to segmental cramp of puborectalis.

7. **Associated with carcinoma** – Squamous cell carcinoma of anus, adenocarcinoma of rectum. In both, the anal skin is involved and shows fissures resembling chronic idiopathic fissures but there will be more induration, inguinal glands may become hard and enlarged. Histopathological examination confirms the diagnosis.

8. **Syphilis** – Fissures due to syphilis may either be primary chancre or condyloma (Secondary). A classic primary chancre is typically a single painless papule, which quickly erodes to form an ulcer with smooth base and firm raised borders. These ulcers are usually painless but there may be rectal pain, tenesmus, difficulty during defecation and rectal discharge. The presence of symmetrical lesions in either side of anal canal will raise suspicion.

Anal condylomas affect anal orifice and perianal skin. The anal region is moist and pruritic. The presence of multiple superficial ulcers should raise the possibility of syphilis. Secondary lesions and mucous patches are also present in mouth. The discharge from ulcers contain spirochetes, VDRL (Venereal disease research laboratory) and TPHA (Treponema pallidum haemagglutination test) are also used for diagnosis.

9. **TB** – Rarely TB ulcer occur in anal area. Early stages may present with a simple fissure and late stage shows characteristic undermined edge. Histological examination confirms the diagnosis.

10. **HIV (Human immunodeficiency virus)** – Recent studies shows that there is clear association between HIV positivity and ulcerative lesions. Therefore timely diagnosis and treatment is of paramount importance. ELISA and western blot tests are available to detect HIV infection.

Ano receptive intercourse and diarrhoea, illness predispose HIV patient to develop anal fissure characterized by persistent gnawing pain, location above dentate line, broad base, deep invasion,

a patulous anus and AIDS.

11. **Agranulocytic angina** – The anal lesions fail to respond to normal treatment and the blood study show decreased leucocyte count and low percentage of granulocyte. Similar lesions can be found in mouth and throat.
12. **Gonorrhoea** – The patient may have slightly erythematous rectal mucosa and small ulceration at anorectal junction. Diagnosis can be made by culture of rectal exudates and biopsy.
13. **Chancroid** – An erythematous tender papule develops at the side of inoculation and within a few days it becomes pustule and develops into a painful ulcer which have poorly demarcated border and characteristic necrotic irregular base covered by mucopurulent exudate. There may be painful inguinal lymphadenopathy. Culture from enlarged lymph node is diagnostic.
14. **Lymphogranuloma venereum** – Rectal involvement is manifested by rectal discharge and perirectal fistulae or abscess cryptitis. Progressive stricture can cause rectal stricture in untreated cases. Culture from lesions and enlarged lymph nodes confirm the diagnosis.
15. **Idiopathic stenosis of internal sphincter** – In older patients, usually women accustomed to taking aperients over many years this condition occurs. Due to this the anal canal has for a long time been spared of the regular dilating action of a normal solid motion. As a consequence the internal sphincter undergoes contraction and may become fixed in this contracted condition by fibrosis. There may be no history of chronic or existing fissure and no other symptoms except difficulty in passing motions.

Complications

- Abscess
- Fistula
- Sentinel tag
- Hypertrophied papilla
- Anal contracture

Diagnosis – A typical H/o anal pain associated with defaecation is the pathognomonic of anal fissure. The diagnosis is confirmed by demonstrating the anal ulcer. In long standing cases, sentinel tag may be present. In chronic cases the triad of disease i.e. anal fissure, sentinel tag and hypertrophied anal papilla can be demonstrated. There may be spasm of anal sphincters with puckering of anus. Because of intense pain, digital examination of anal canal should not be attempted.

Examination – It is very difficult because of severe pain. Goligher says "It is necessary that one should display particular gentleness in its examination."

Inspection – It is the most important step in examination for anal fissures. The findings of marked sphincter spasm with a suggestive history is strong presumptive evidence of existence of a fissure. The spasm can usually be overcome by gentle, determined lateral separation of the anal orifice, by traction with the fingers placed close to either side of anus.

The first thing to be noted is sentinel tag, posteriorly or anteriorly, big or small. The fissure itself is triangular or pear shaped slit in the skin of anal margin just above the base

sentinel tag. The floor may consist of connective tissue or internal sphincter (pale transversely running fibres).

The superficial fissures are mere cracks in the wall of anal canal which may bleed on stretching. There may be acute inflammation with frank pus exuding from fissure.



Acute fissure



Chronic fissure

Palpation and DRE – It is not done usually as it is quite painful. By palpation, sphincter spasm is confirmed. The maximum tenderness is elicited when finger is placed on the fissure bed, induration of lateral edges of fissure indicating fibrosis. At the upper end of fissure, a hypertrophied anal papilla may be palpable.

Proctoscopy – This is often impossible but in doubtful cases it may demonstrate other lesions also.

Sigmoidoscopy – It is best performed with a narrow bore instrument, its main value being to exclude proctocolitis or crohn's lesion and rarely used to reveal unsuspected carcinoma.

Treatment – An appropriate line of treatment should adopted for this condition, so that the patient suffers the least. Superficial fissures attended by a relatively short history of pain, heal spontaneously often in two or three weeks. In contrast to this, real chronic fissure are most resistant to any kind of conservative treatment. Therefore it is desirable to make an early decision as to whether a fissure is likely to heal under an expectant regimes or an operation will be mandatory.

The treatment can be divided into 4 parts—

- i. Conservative
 - ii. Pharmacotherapy
 - a) Phytotherapy
 - b) Chemical-pharmacotherapy
 - iii. parasurgical
 - iv. Surgical
- I) Conservative management (Nonpharmacotherapy) -

- i. Anal hygiene
 - ii. Sitz bath or hot packs
 - iii. Avoidance of constipation
- a. Most important entity of conservative line of treatment i.e. Fibre rich diet.
 - b. Mild aperients are usually required e.g. Erand Bhrist Haritaki etc.
 - c. Oily preparations such as Almond oil \ liquid paraffin (Cremaffin) are especially suitable. They produce soft easily passed motion.
 - d. By this the repeated anal trauma occurred by passage of hard faeces can be avoided, man fissures heal rapidly without any other treatment. The use of aperients should be justified only and long term unjust use should be avoided since they cause stenosis of internal sphincter.
- As the pain is due to sphincter spasm, rest of sphincter is essential as advised by Becon and strictly recommended by Gabriel.
 - Small or medium size dilators of Thorlaksons's or St. Mark's Hospital Style should be used. Finger can be used. Disposable dilators are available.
 - Endoscopic dilatation with less complication is done these days.

PHARMACOTHERAPY-

Phytotherapy- Parikartika as disease has been considered very lightly by Sushruta and other successive authors. They have described the treatment of Parikartika in most brief manner. Only Kashyapa has mentioned its management according to Doshic type of Parikartika, but it is true that none of them has described surgical management, thereby showing that there was no need of surgery as the disease was completely cured by the use of medicinal preparations only, and they were satisfied with management.

According to the uses of medicines it is divided into two categories

1. Local
2. General

1. Local Treatment

This local treatment is nothing but only Basti Karma. Basties are prepared in Ghrita, Tail and milk with the help of other different drugs. Most of the drugs, which are used in Basti Karma are Vata-Shamak, Vrana Sodhana-Ropak and Pitta Shamak. There are three types of Basti described by Acharya Sushruta.

- i) Anuvasana Basti
- ii) Pichha Basti
- iii) Sheetal Basti

Remedy consists in employing a Pichha Basti with Yastimadhu (*Glycyrrhiza glabra*) and Sesamum pasted together and dissolved in clarified butter and honey. patient should be kept on (Ghrita) on Anuvasana Basti, (in cases of Pitta-predominance) Basti should be employed with cream of clarified butter and if case is Vata Predominance with Tail cooked with Yastimadhu.

Charaka has also advocated both types of medicines which have been advocated by Sushruta. He says Sheetal basti consisting of drugs having Madhura and Kashaya properties (Pichha and Anuvasana Basti) prepared with Madhuyasti powder and Kwatha should be used.

Further, he has given the advice for the administration of Sheetal basti consisting of the milk prepared with sweet and cooling drugs and it has been mixed with liquorice (Basti prepared with *Ral* (*Shorea robusta*), Madhuyashti, Kamal (*Nelumbo nucifera*) Raswat (*Berberis aristata*) and mixed in milk. (C. Ci. 7/56-57).)

2. General Treatment

The oral preparation have many-fold objectives. Some drugs are used to correct the gastrointestinal disorders and other are used as laxative and few more as to increase the digestive fire (Deepan, Pachan) as Hingwastak churna, Chitrkadi vati. They have advised drugs as the Tridosha-Shamak. Sushruta has advised for cold water bath and milk for oral administration.

In this disease the main problem is that of constipation and pain only. If one corrects the constipation part of disease and alleviates the pain the disease may disappear to a great extent within few days. Pain due to Vata and Pitta vitiation and constipation due to two reasons, firstly is the habitual constipation and other is due to fear of pain to patient of apprehension does not go for the defaecation. Charaka has also written about the oral treatment in Parikartika and advised for only drinking milk with almond oil.

He has also advised to take Amla Dravya because it has the property of Vata Shamak and increases the digestive fire.

In Kashyapa Samhita Khilsthana-10 the treatment has been given to predominance of Dosha.

1. Vatik Parikartika

Brāhiti (*Solanum indicum*), Bael (*Aegle marmelos*) and Anant (*Hemidesmus indicus*) are used which all have the Vata-Shamak property.

2. Pattika Parikartika

Madhuyasti, Hanspatti (*Adiantum lunatum*), Dhaniya (*Coriandrum sativum*), Madhu etc. These drugs are useful for Pitta Shamana and has also property to correct abdominal trouble with laxative.

3. Kaphaja Parikartika

In this he has used the drugs which have the property of Kapha-Shamak and Vata shamak, also as Kantakari (*Solanum surattense*), Peepal (*Ficus religiosa*), Gokshuru (*Tribulus terrestris*) and Salt.

Further more he has given the treatment for person who is suffering frequently from Parikartika. Milk treated with drugs which have Madhur Rasa and mixed with honey, sugar, Til taila (*Sesamum indicum*) and Madhuyashti.

Chemical-pharmacotherapy-

(i) **Anaesthetic ointment** - To lessen pain and relieve anal spasm local anesthetic agents (5% Lignocaine/xylocaine ointment) can be applied.

- It should be applied before and after motion.
- It should be applied as further inside as possible in the anal canal, with the help of finger or anal dilator or cone shaped nozzle but it should not touch the perianal skin because it produces local dermatitis and pruritis.
- 10% Xylocaine (Lignocaine) gel/5% lignocaine ointment is the preparation of choice but its long term use causes dermatitis.

(ii) **Long acting local Anesthetics** – Oil mixed injection (to delay the absorption of anesthetic agent) of anesthetic agents was infiltrated around inferior rectal nerves, so as to block these nerves resulting in pain relief. 20 – 25 ml. of drug is used. Nupercaine and proctocaine etc are available.

– These are irritating to the fissure and slight contamination is followed by sepsis and fistula formation.

(iii) **Analgesics / Muscle relaxant / Anti stress** –

– Oral analgesics and muscle relaxants give immediate relief to the patient in agony but the pain reappears when their plasma level goes down.

– They usually cause APD in already starving patient and so should always be used with antacids.

(iv) **Application of glyceryltrinitrate** –

– It does chemical sphincterotomy

– Nitric oxide is the neurotransmitter that induces relaxation of internal sphincter.

– Glyceryltrinitrate donates nitric acid when applied locally as 0.2% w/w and produces enough relaxation for faster healing.

– Improves blood flow to the area promoting healing.

It has bad side effect like severe headache.

(v) **Nitroglycerin** – It comes under organic nitrates. It causes vasodilatation of both arteries and veins. It is predominantly used in symptomatic relief of Angina pectoris. The vasodilator effect is used rectally to enhance blood supply in fissure and help in healing of fissure in ano. The side effect are flushing, Headache.

✓(v) **Ca⁺⁺ Channel blockers** – as Diltiazam, Nifedipine. It works as smooth muscle relaxant. If applied to anal mucosa it causes relaxation of internal anal sphincter muscle, thus causes CHEMICAL SPHINCTEROTOMY.

✓(vi) **Botulinum neurotoxin** – Botulinum toxins inhibit the cholinergic transmission by inhibitory Ach vesicle release process. This therapeutic action is used in treating fissure in ano by paralyzing the internal sphincter in spasm.

(vii) **Hyperbaric oxygen** – Oxygen at high pressure is termed as Hyperbaric oxygen. Increased oxygen tension is primary therapeutic goal. Even a small increase in Po₂ in previously ischaemic areas may enhance the bactericidal activity of leucocyte and glycogenesis. Thus, repetitive brief exposures to hyperbaric oxygen are a useful adjunct in the treatment of ch. Refractory osteomyelitis or crush injury or for the maintenance of compromised skin or tissue graft or flaps. It has bacteriostatic action.

PARASURGICAL -

Technique of kshara sootra karma in chronic fissure-in-ano with sentinel tag
Poorva Karma

– Written informed consent of the patient and attendant is taken.

– Anti-tetanus prophylaxis given.

– Xylocaine sensitivity test done.

– Preparation of operative field done by means of cleaning, shaving and painting. F soap water given 12 hours prior to operation.

– Patient kept nil orally for 12 hours before operation.

Another soap water enema given in the morning of operation day.

Premedication of the patient done as and when required $\frac{1}{2}$ hour before, after maintaining the IV line.

Pradhana Karma – A simple lithotomy position is required to carry out the minimum invasive technique – The Kshara Sootra Karma to manage the patient of Chronic fissure-in-ano with sentinel tag\Fissure abscess. Afterwards, the conventional rituals are observed to prepare the operative field by scrubbing, cleansing and painting with antiseptic solutions followed by draping of sterile linens.

Haemorrhoidal block – 1% lidocaine with adr. Hcl is given in the dose of 7mg/kg body weight in fan shaped direction about 1cm below and above the anal orifice in midline using 21 G needle. Earlier lidocaine with adr. Hcl sensitivity test is done in each case posted for Kshara Sootra Karma.

Transcutaneous pudendal nerve block – The ischial tuberosity is taken as the landmark to perform transcutaneous pudendal nerve block. The tuberosity is palpated subcutaneously through the buttock and 7.5 cm long needle (21G) is introduced into the pudendal canal along the medial side of the tuberosity. The pudendal canal lies about 1 inch (2.5 cm) deep to the free surface of the ischial tuberosity. The local anesthetic 5 ml of 1% is then infiltrated around each side of the pudendal nerve (Rt & Lt.).

Digital rectal examination is performed once again to exclude any specific pathology. The proctosigmoidoscopy is also carried out, if it is required.

Intracanal packing is given to avoid soiling during operation.

Digital anal dilatation (stretching of the anal sphincters) – A procedure similar to that described by Recamier (1829)\Lord's procedure.

Technique – With the patient in lithotomy position, the anus is forcibly stretched by introducing first both index finger and then index and middle fingers of both hands, which maintain a firm distraction for three or four minutes. During this manoeuvre the forearms are fully pronated so as to stretch particularly the posterior wall of the anal canal. Often a better stretch is obtained in male patients by using the sagittal rather than the transverse plane as this avoids the fingers coming in contact with the ischial tuberosities. The problem does not arise in women, owing to their wider pelvis.

Revelation of the fissure – After the digital anal dilatation the lubricated bivalve anal speculum is inserted into the anal canal and fissure is exposed.

Partial dorsal internal sphincterotomy – for the easy execution of partial dorsal sphincterotomy two special instruments are essential- a bivalve type of anal speculum and a long no-7 Bard Parker scalpel handle carrying a small No-10 blade.

Technique – Bivalve anal speculum is inserted into the anal canal, exposing fissure on the posterior anal wall. Incision made through the fissure from just above the pectinate line to 0.5cm beyond the anal verge and is gradually deepened through the internal sphincter muscle fibres. Bleeding from the raw surface is controlled by the application of gauze swab soaked with Feracryllum solution.

The internal sphincteric tissue plane between the internal and external sphincters has been reached, as indicated by the absence of transversely running muscle fibres bundle. Then the interior edge of the external sphincter is snicked.

Holding of the Sentinel tag – After stretching the anal sphincters and partial dorsal internal

sphincterotomy, the sentinel tag is boldly held with the help of Allis tissue forceps. Thereafter a semicircular groove is made with blunt scissor at the base of sentinel tag, to facilitate the removal of Kshara Sootra there in.
Bifid method – In case of conglomerated and large sentinel tag, it is bisected in two halves subsequently dealt separately with Kshara Sootra by extending same incision and giving sphincterotomy in mid of sentinel tag.



PATIENT IN LITHOTOMY POSITION AFTER PREPARATION



LOCAL HAEMORRHOIDAL BLOCK



LOCAL PUDENDAL NERVE BLOCK



PACKING OF ANAL CANAL



STEPS OF DIGITAL ANAL DILATATION (RECAMIER'S METHOD)



Revelation of anterior fibres
of internal sphincter



Incision of anterior fibres of
internal sphincter fibres



PARTIAL DORSAL
sphincter



HOLDING OF SENTINEL
TAG



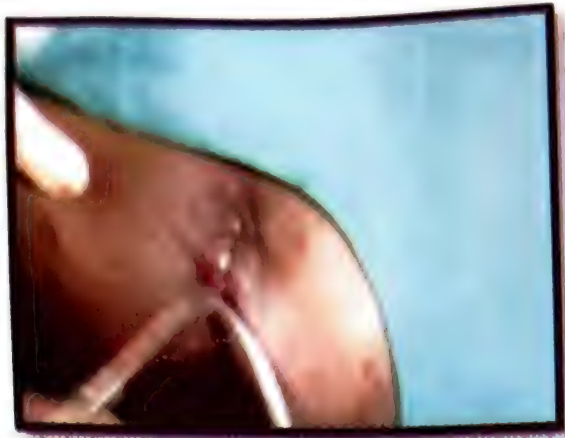
MAKING OF SEMI
CIRCULAR GROOVE



TRANSFIXATION OF SENTINEL TAG



LIGATION OF SENTINEL TAG



EXCISION OF LIGATED SENTINEL TAG DISTAL TO LIGATURE



T-BANDAGE APPLICATION



BIFID METHOD

Transfixation of the dissected tag is made by using the Kshara Sootra as a ligature around body 76 mm curved needle to facilitate the ligation of the pedicle of the sentinel tag.

Moreover, for the purpose of transfixation of Kshara Sootra in form of horizontal mattress suture can be also applied to entangle the whole part of the broad base of the otherwise simple transfixation with single bite of Kshara Sootra as ligature is sufficient to the tag.

Ligation of sentinel tag is done at the demarcation made by semi circular groove, by tying Kshara Sootra properly and snugly around the dissected tag.

After achieving the secured ligation, the excision of ligated sentinel tag is carried out about 5 mm distal to ligature knot to minimise the necrosed tissue and subsequent debris in turn to reduce of post operative infections.

Gauze soaked with Jatyadi Taila is placed inside the canal to safe guard the anal canal from corrosive action of extra Kshara. One end of the anal packing given initially is withdrawn out facilitating easy removal.

T-bandage is given to hold the lay on dressing in position.

Paschata Karma

- Simple non narcotic analgesics whenever required.
- Intravenous fluid perfusion is restricted to minimum (not more than 500ml) to avoid urinary retention.
- Regular patients are orally allowed after 3 hrs of operation.
- Regular monitoring for haemorrhage is done without disturbing anal dressing.
- **Post operative care and prescription**
 - Dressing is removed next morning after that ushnodaka avaghana with *Daru Haridra Kashaya* is given.
 - Frequent ushnodaka avaghana (sitz bath) every 6 hourly with *Daru Haridra Kashaya*.
 - Instillation of jatayadi taila into the anal canal with the help of No. 6 rubber catheter attached with a 5ml of syringe.
 - Triphala guggal - 2 tablets x BD
 - Amalaki churna - 4 gm x BD
 - Triphgol powder - 2 TSF x HS SOS
 - ASD daily till discharge of the patient with jatayadi taila.
- **Diet** - High fibrous diet, Light bland diet, leafy vegetables, milk, cream, curd, lassi etc. plenty of water orally.

SURGERY

The surgery is usually elective and done only after complete and through study of the patient as well as pathology. There are two aims to be achieved

- i) Relaxation of internal sphincter muscle.
- ii) Avoidance of recollection of discharge in the wound.

Preoperative preparation - Bowel preparation and part preparation.

Anesthesia - Spinal, deep general with relaxant.

Position - Lithotomy or Lt. Lateral

Method:

- 1) **Stretching of the anal sphincters (Lord's procedure)**

Procedure

- Index finger of one hand is introduced in the anus followed by its counter part.
- The anus is forcibly stretched
- Second fingers of both the hands are then introduced and are stretching is then maintained for 3-4 min.
- Stretching in saggital plane is more effective in males than lateral stretching where ischial tubercities bound the limits. In females pelvis is larger so the problem does not arise.
- During the manoeure the fore-arms are fully pronated to stretch particularly the posterior wall of anal canal.

Effect

- Temporary paralysis of int. and ext. sphincter for days or weeks.
- There may be incontinence during the time.
- Sphincter fibers are torn

- Bruising with oedema
- Fissure is widely open

Result

- Pain is relieved
- Condition heals with great rapidity
- Early normalization
- Reduction in anal pressure

Complication

- Perianal oedema, incontinence.

2) Excision of Anal fissure (Gabriel's operation)

- Also known as dorsal fissurectomy. Popularized by Gabriel.
- Stretching of the anal canal, a broad triangular skin flap along with the sentinel tag and lesion is excised.
- Post operative sitz bath, analgesics, antibiotics.
- Dilatation.

Result

- The wound is large and takes about six weeks to heal.
- The pain is instantly relieved
- Incontinence may develop if more than 2/3 of the int. sphincter is cut.
- Wound infections may occur if proper care is not taken.

3) Excision of Anal fissure with Immediate skin grafting

- Hughes operation
- To shorten convalescence in Gabriel's method & expedite healing. An immediate split thickness skin graft to the wound is applied after excision of the fissure.

Results

- Bowels are confined for 5-6 days.
- Results are good but procedure requires long hospital stay.

4) Division of internal anal sphincter

- Internal sphincterotomy, also called Eisenhammer's procedure
- An incision is given in posterior midline, a white fibrous band is reached which is the inferior border of the internal sphincter muscle.
This incision is extended upto lower 1/2 of the internal sphincter and it is divided. Wound is left open to heal by granulation.

(a) Technique of open posterior Internal sphincterotomy

- A bivalve speculum in position, exposing fissure on the posterior anal wall. Incision made through the fissure from just above the pectinate line to 0.5 cm beyond the anal verge. It is gradually deepened through the internal sphincter muscle fibers.
- Anal skin tag at the lower end and hypertrophied anal popilla at the upper end are excised.

Results

Immediate relief of pain.

With in average 17 days the healing of the wound is adequate for the patient to start his routine work.

Incontinence and mucoid discharge are the two main drawbacks of the procedure.

Techniques of lateral subcutaneous Internal sphincterotomy

(b) A bivalve speculum is introduced into the anal canal and rotated so that the handles lie to the patient's Right and the blades are situated in front & behind.

Instrument is then gently opened to a 2 finger breadths and left lateral wall of the anal canal and of rendering the lower margin of the internal sphincter in that sector taut and easily palpable.

A Von Graefe cataract knife is introduced on the outer side of this muscle

The point of the blade is inserted through the perianal skin, immediately lateral to the lower edge of the internal sphincter and passed vertically upwards in the intersphincteric plane till it is adjusted to lie at or just above the level of the pectinate line.

By means of delicate strokes of the blade in the direction of the anal canal the lower half of the internal sphincter is then divided, care being exercised not to penetrate the lining of the canal.

Sentinel tag or fibrous polyp is excised simultaneously or before the procedure.

Results

Immediate relief of pain

Faster healing of fissure

Early convalescence

Incontinence and soiling of underclothes with mucofecal discharge are the main drawbacks.

5) Cryosurgery

It is method of using sub-zero temperature for selective destruction of unwanted tissue.

Liquid nitrogen with boiling point (-196°C) is the best agent yet and it ensures total cell death in the treated area.

Cryoprobe slightly smaller than that of the size of lesion is applied firmly.

Liquid N_2 is then passed through the probe for 3-4 seconds.

Cryoprobe adheres to the white discolored skin and surrounding ice.

This condition allows traction sufficient to draw the frozen skin away from underlying structures.

Freezing is stopped when it is judged to have spread adequately i.e. 2-3 mm beyond the surrounding normal tissue.

Results

The fibrotic tissue and sentinel tag becomes blackish in color and necrosed and fall within 4-5 days after cryosurgery. The wound heals gradually. There is much of post operative pain.

Watery discharge is more.

Such a regimen is to be followed for 3 weeks.

Table showing conditions for conservative and surgical treatment

Sr. No.	Condition for conservative treatment	Condition for surgical treatment
1.	Short and single history of pain	Long and continues or intermittent history of pain.
2.	No sentinel tag	Sentinel tag.
3.	No induration in the edges of fissure	Induration in the edges of fissure
4.	Scar is superficial	Scar is deep.
5.	Fibers of int. sphincter not exposed	Fibers of int. sphincter exposed.
6.	Mild to moderate pain	Severe pain, in acute or chronic case of fissure-in-ano.

In nut shell the objectives of all the treatment are:

- Complete relaxation of internal sphincter.
- Oral pain medication before any anticipated bowel movement.
- Stool softener, weak bulk laxative or cathartics.
- Soothing ointments with anaesthetizing properties may be applied but with doubt effect.

Self dilation if and when possible.

★ Diet for fissure in ano

1 परिसर्वतो भावेन कृन्तनीव चिन्तनीव वेदना।

2 वैद्यातुरनिमित्तं वमनं विरेचनं च पंचदशधा व्यापद्यते। सामान्यमुभयोः सावशेषौषधत्वं, जीर्णौषधत्वं, हीनदोशापहृतत्वं वातः अयोगो, अतियोगो, जीवादानम्, आध्मानं, परिकर्तिका, परिस्त्रावः, प्रवाहिका, हृदयोगपसरणं, विबन्धः इति।

(ड. 38/16)

3 तत्र गुदनाभिमेद्वरस्तिसरः सु सदाहं परिकर्तनमनिलसंगो वायुविष्टम्भो भक्तारुचिश्च भवति।

(सु. चि. 34/3)

4 ह्रस्वं दीर्घं तनु स्थूलं जीर्णं शिथिलबन्धनम्।

(सु. चि. 34/16)

पार्श्वच्छिद्रं तथा वक्रमष्टौ नेत्राणि वर्जयेत्।

अप्राप्तयतिगतिक्षोभकर्षणनस्त्रवाः।

गतिर्जिहवा तेषां दोषा यथाक्रमम्।

(च. सि. 5/4-5)

5 तत्र पिच्छावस्तिर्यष्टीमधुकृष्णतिलकल्कमधुघृतयुक्तः, शीतम्बुपरिषिक्तं चैनं पयसा भुक्तवन्तं घृतमण्डेन यष्टीमधुकासिद्धे तैलेन वाऽनुवासयेत्।

(सु. चि. 34/16)

Add:- Injection - Paralytic action in the smooth muscle.
cream - Diltiazem.

CHAPTER - 8

APPLICATION OF KSHARA (KSHARA SOOTRA) IN ABSCESS AND INFECTED WOUND

Abscess

In the classical literature of ayurveda, it is given that "Vidhateeti Vidradhi". This is known as vidradhi which has been correlated to an abscess by many authors. In modern medicine an abscess is said to be a collection of pus.

Types -

6 types of vidradhi mentioned in the ancient medicine -

- | | | |
|-----------|----------------|-------------|
| 1. Vataja | 2. Pittaja | 3. Kaphaja |
| 4. Raktaj | 5. Sannipataja | 6. Kshataja |

One more clinical classification is given by Acharyas. It includes two main types of vidradhi having their subtypes.

- | | |
|-------------------|------------------------|
| 1. Bahya vidradhi | 2. Abhyantara vidradhi |
|-------------------|------------------------|

Abhyantara vidradhi is again divided into 10 subtypes depending on the site.

- | | |
|------------------------------------|----------------------------------|
| 1. Guda - Ano-rectal abscess | 2. Vastimukha- Prostatic abscess |
| 3. Nabhi- <u>Umbilical</u> abscess | 4. Kukshi |
| 5. Vankshan- Appendicular abscess | 6. Vrikka - Pyonephrosis |
| 7. Yakrit - Hepatic abscess | 8. Pliha - Splenic abscess |
| 9. Hridaya- Purulent pericarditis | 10. Kloma- Pancreatic abscess |

In surgical practice there are three varieties of abscess seen.

1. **Pyogenic abscess**- It is the commonest variety. The organisms gain entry either directly through penetrating wound to form abscess by direct infection, local extension from adjacent focus of infection, lymphatics and blood stream.

Pathology - The suppurative infection gradually leads to cell death and liquefaction. The resulting yellow fluid is called pus which contains living or dead bacteria and leucocytes. An abscess cavity is filled by pus and lined by a pyogenic membrane which contains dead tissue cells and a wall of granulation tissue. As the recovery starts, the pyogenic membrane is converted into fibrous tissue and the cavity is covered by granulation tissue gradually.

Clinical features-

- | | |
|-----------------------|-------|
| Rubor | Dolor |
| Calor | Tumor |
| <u>Function lesia</u> | |

Presence of pus- detected by elevated temperature, brawny induration or fluctuation depending on deep or superficial pus.

Treatment -

Where there is pus let it out

So the basic principle is to drain the pus, send it for culture and sensitivity and give proper

antibiotic coverage. Keep the limb elevated and give rest to the affected part.

Technique for incision and drainage-

Free or liberal incision-

An incision is made on the most prominent and the most dependent part.

Hilton's method-

Particularly employed in places having important structures e.g. groin, axilla, neck. After giving incision a pair of artery or sinus forceps is forced into the abscess cavity and its blades are gradually opened to extrude out the pus. The forceps is taken out with its jaws open.

Exploration-

After giving incision a finger is inserted into the abscess cavity and all the loculi are broken into one cavity for complete drainage.

Counter-incision -

When the most prominent part is not the most dependent part, complete drainage of pus is not possible by a single incision, so a counter incision is required at the most dependent part to facilitate drainage by gravity.

Drainage -

A corrugated rubber drain can be used for the drainage of the cavity. Gauze is packed into the wound.

2. Pyaemic abscess

It is characterized by formation of secondary foci of suppuration in various parts of the body caused by the lodgement of septic emboli consisting of a clump of organisms, infected clot or vagitations, formed as a result of breaking up of an infected thrombus.

Clinical features -

- Generally multiple in number.
- Commonly occur in subfascial plane.
- Signs of inflammation are not present
- Constitutional disturbances are tremendous with high fever, rigor, toxæmia.
- Such abscesses may occur in viscera and may lead to death.

Treatment -

- Administer a suitable antibiotic parenterally as soon as possible after culture and sensitivity of pus.
- Drain the superficial abscess.
- Search for the primary focus.

3. Cold abscess

It does not produce hot and painful abscess.

It is almost always a sequel of tubercular infection anywhere in the body, commonly in the lymph nodes, bones and joints. Caseation of lymph nodes form the cold abscess. Brawny induration, edema, tenderness may be present only if it is associated with secondary infection.

Commonest sites-

Neck and axilla, Loin, side and back of the chest wall, Near the ends of long bones and joints

Treatment

- Antitubercular regimen
- Aspiration through most dependent and most prominent part.

May require excision of affected group of lymph nodes.

Never make an incision for the drainage of cold abscess as it invites secondary infection

and forms a persistent sinus.

Guda vidradhi

It has been mentioned under the category of abhyantar vidradhi. When describing the clinical features Acharya Sushruta has mentioned that it leads to obstruction of the vayu. According to the site mentioned it can be compared with anorectal abscess.

Anorectal abscess

Abscess around lower rectum and anal canal are taken under this heading. These are important as they often culminate into fistula in ano.

Causative organisms-

E.coli, Staphylococcus aureus, bacteroids, Streptococcus, B. proteus

Classification -

1. Perianal abscess-

It arises from acute inflammation of the anal gland. The pus collects within the internal sphincter and gradually moves between the internal sphincter and conjoined longitudinal muscle to track down and become superficial in perianal area. It may arise from infection of a thrombosed external pile also.

Clinical features-

Throbbing pain around anus which exaggerates during defaecation.

Constitutional symptoms such as fever, headache.

On inspection an angry lump may be seen at the anal margin.

On palpation, a very tender cystic lump may be felt by the finger in anal canal just below the dentate line.

Sequelae - If left untreated, it may rupture into anal canal. Rupture to the exterior causing fistula formation may pass laterally to form ischiorectal abscess

2. Ischiorectal abscess

Causes - Extension of anal gland inflammation laterally, Infection via blood or lymph, Penetrating injury causing direct infection, Extension from a pelvi-rectal abscess.

As the ischiorectal fossa is full of fat and poorly vascularised, so infection continues to spread and soon involves the whole fossa. Still left untreated it spreads to fossa of opposite side also.

Clinical features -

Acute pain by the side of the anus which excacerbates during defecation.

Constitutional symptoms may be present.

On examination, a tender brawny indurated swelling is seen and felt superficial to the ischiorectal fossa.

3. Submucous abscess -

It is situated deep to the mucous membrane of anal canal above the dentate line.

Causes - anal gland infection or infection after sclerotherapy in haemorrhoids.

Treatment of all abscess describe above is Incision and drainage immediately under antibiotic

coverage. A cruciate incision is given over the most prominent part of the swelling as inadequate incision may lead to fistula formation.

4. Pelvi-rectal abscess -

It is situated above the levator ani and below the pelvic peritoneum.

Causes - It is a simple pelvic abscess occurring from appendicitis, diverticulitis, salpingitis, parametritis or by extension of ischio-rectal abscess.

Sequelae - Burst into rectum

Leads to ischio-rectal abscess

Treatment - Drainage through the fornix of vagina or through the anterior wall of the rectum. In short, incision and drainage is the treatment of choice in a fully developed abscess. As mentioned in Samhitas also. If the vidradhi does not resolve in 7 days then it leads to suppuration. At this stage incision has to be given to let the pus out.

In Ayurvedic literature following mode of treatment is written-

1. **poultice** - Application of paste or poultice made by different drugs depending on the doshaj predominance. e.g. Dashanga lepa.
2. **Swedana** - It reduces the inflammation, increases the blood flow thereby increasing the clearance of toxins from the site but it is contraindicated in pittaja and raktaja vidradhi.
3. **Raktmokshan-blood letting**
4. **Patana karma** i.e. incision \ drainage to let the pus out in the suppurated vidradhi.
5. **Shodhan and Ropana** - Various yogas e.g. Jatyadi ghrita etc. are given in samhitas for the shodhan and ropan of the vrana formed after drainage of the vidradhi by giving incision.
6. **Kshara karma**- Kshara has got the properties of -

Shodhan (cleansing)

Ropana (healing)

Shoshana (adsorbent)

Skandhan (styptic)

Lekhana

So because of these properties, kshara can be used in different manners for proper debridement and proper healing in the suppurated vidradhi. It can be used in form of pratisarniya kshara, as kshara varti and kshara sootra placed or packed into the abscess cavity. Kshara varti or the kshara sootra will lead to the lekhan of the cavity alongwith shodhan and ropan as follows.

- Latex of Snuhi (Euphorbia) -Proteolytic, therefore dissolves fibrous tissue.
- Apamarg kshara - Alkali in nature which debrides the cavity and liquifies the thick pus, keeping the cavity clean via drainage of pus.
- Haridra Powder - Anti-allergic, antiseptic, wound healer.

The Effect of Kshara Sootra on Local Tissue

The kshara sootra or the varti applied cause early necrosis of the unhealthy tissue with active granulation along with capillary formation, fibroblastic proliferation and collagen formation leading to epithelial hyperplasia. Thus, leading to the healing.

Poorva karma (preoperative measures)

- Written consent of the patient is taken.

Xylocaine sensitivity is done.

The patient is given prophylaxis against Tetanus i.e. 0.5 ml of tetanus toxoid.

The patient experiencing excessive anxiety should be administered an mild anxiolytic drug before the procedure.

Pradhana karma

Place the patient in the required position.

Local anaesthesia can be used as per requirement.

Prick the abscess with the help of a wide bore needle and syringe for the aspiration of pus and to make an opening or a porta.

Insert the piece of kshara sootra or varti through that opening.

Apply the dressing.

Alternatively a wick soaked in ksharodaka could be inserted through that porta and then dressing could be apply.

In case of **Ano-rectal abscess** following procedure should be applied-

Anesthetise the patient.

In the lithotomy position, careful palpation of the swelling is carried out with index finger of one hand in rectum and other hand over external swelling.

A straight incision is made over the most prominent part of abscess, usually 3-4 cm from anal verge, and gradually deepened until pus is obtained.

All loculi should be gently broken down with finger and extent of the cavity is explored.

As abscess most commonly extends towards the posterior midline, so extending the incision towards posterior-medial side via main prolongation of cavity.

Should there be any communication with the anal canal, a kshara sootra may be passed through and loosely tied.

Wound is dressed and T- bandage is applied.

In case of **ACUTE FISTULOUS ABSCESS AND BIG CAVITY-**

In this case the abscess is incised and drained.

If fistulous tract contains a large cavity, kshara pichu is put inside the cavity. Insertion of pichu helps in proper drainage and debridement.

After debridement, kshara sootra is applied.

Post operative care and prescription

Dressing is removed next morning.

Observe for the debridement kshara has done.

Analgesics, if patient is not able to bear the pain.

Again the same procedure is repeated as per requirement or the condition of the patient and abscess.

Shigru guggulu - 2 tablets × TDS

Amalaki churna - 5 grams × BD

Vrana

Vrana is the important disease in Shalya Tantra as Jwara in Kaya chikitsa. All types of Shalya

and Shastra karma results into vrana. The one who knows diagnosis, prognosis and management of Vrana will be expert Shalya chikitsaka. Such an expert in the management of Vrana is called as Vrana chintaka and Vranakovidā.

Definition of vrana

As the scar of a wound never disappears even after complete healing and as its imprint persists lifelong, it is called vrana.

Definition

- Wound is a breach in the normal tissue continuity resulting in a variety of cellular and molecular sequel which may be accidental or a result of planned surgical intervention
- It is a breakdown in the protective function of the skin, loss of continuity of the epithelium, with or without the loss of underlying connective tissue following injury to skin and underlying tissue/organ caused by surgery, blow, cut, chemicals, heat, cold, friction, pressure or disease etc.

Risk population

- Elderly
- Malnourished
- Chronically ill or bed ridden
- Under prolonged immunosuppressive drug therapy
- Undergoing radiation therapy
- Who had stroke or peripheral vascular disease
- Diabetics
- Obese

Types of vrana

Agantuja vrana

- Chinna vrana (Excised wound)
- Bhinna vrana (Punctured Cavities/Stab wound)
- Viddha vrana (Punctured wound except in hollow organ)
- Kshataja vrana (Lacerated wound)
- Pichchita vrana (Crush injury)
- Ghrista vrana (Abrasion)

Nija vrana.

- Vataja vrana
- Pittaja vrana
- Kaphaja vrana
- Raktaja vrana
- Sannipataja vrana

Chinna vrana : Extensive wounds, either oblique or straight, associated with separation of parts of the body.

Bhinna vrana : Injury to the body cavities with the points of spears, lance, sword or by hot etc., resulting in discharge (of body fluids or contents).

Viddha vrana : The wound in which any part other than the body cavity gets pierced by sharp pointed weapon, the foreign body in cases may remain either protruding out or may have gone out through it.

Kshataja vrana : An irregular wound of the body, which neither exhibits the features of extensively excised, nor of excessively incised wounds but has the features of both.

Pichchita vrana : When due to a blow and pressure, a part of the body along with the bone

are flattened and is covered with marrow and blood.
Chirya vana : When the skin gets peeled off due to a rubbing injury or any other such cause and is associated with burning sensation and discharge.

Nija vana
Doshas Vitiated by respective causes along with dushyas will travel towards bahirmarga settle there and produce Nija vana.
Localised swelling is the purvarupa of Vrana.
Nija vranas are of sixteen types according to some acharyas, amongst which fifteen types are due to affliction of doshas including Rakta and sixteenth is Shudha vana.

Classification of wounds

According to thickness/morphology

- a. Superficial
- b. Partial thickness
- c. Full thickness
- d. Deep and complicated

According to colour

- a. Red
- b. Yellow
- c. Black

Surgical classification

- a. Clean
- b. Clean-contaminated
- c. Contaminated
- d. Dirty/infected

According to age of wound

- a. Fresh
- b. Old

According to the complexity of the wound

- a. Simple
- b. Compound/ complex

According to the origin of the wound

- a. **Superficial**-it is a scrape, bruise, discoloration or swelling of minimal severity.
- b. **Incised**-Usually caused by sharp knife or glass. These wounds are relatively clean.
- c. **Crush**- These wounds are commonly occurred following industrial, road traffic accidents and war injuries and removal of all the necrotic tissue is required.
- d. **Lacerated** - Usually have jagged edges with certain lacerated and devitalized structure inside the wound.
- e. **Contused**-it is blunt injury caused by heavy blunt object in which continuity of tissue is disrupted by tearing rather than clean cutting.
- f. **Stab** -it is a incised wound that is deeper than wide caused by forcing a pointed sharp edged instrument inside the body by a thrust.

Intentional and unintentional wounds

- a. Homicidal

- b. Suicidal
- c. Surgical
- d. Accidental

International red cross wound classification system

It is a system where certain features of wound are scored and later the score can be graded according to severity, size of wound, here whether there is cavity, fracture or vital structure injured, the presence or absence of metallic foreign body.

A numerical value is given to each feature (E, X, C, F, V, & M)

E= (Entry) centimeters- maximum diameter of the entry.

X= (Exit) centimeters – maximum diameter of the exit (X= 0 if no exit)

C=(Cavity)- can the cavity of the wound take 2 fingers before surgery? (No-C=0, Yes-C=1)

F= (Fracture)- no fracture(F=0), Simple fracture or insignificant comminution(F=1), clinically significant comminution (F=2)

V=(Vital Structure) if injured (V=1), If not (V=0)

M=(Metallic body) visible on x-ray- one metallic body (M=1), Multiple metallic bodies (M=2)

According to duration of the wounds

- I. Acute wounds – closed and open
- II. Chronic wounds

Infected wounds

The infection of the wound is the most common problem faced when dealing with wounds. Even a clean wound may get infected later on, oftenly due to the endogenous bacteria or from external contamination from the embedded foreign material.

Classical signs of infection- These are

- Heat,
- Redness,
- Swelling
- Constant pain.

Additional signs of infected wound are

- Increased exudate,
- Delayed healing,
- Contact bleeding,
- Odour
- Abnormal granulation tissue.

Stages of nija vrana

Nija vrana passes through four stages namely,

- Dusta vrana
- Shudha vrana
- Ruhyamana vrana
- Samyak rudha vrana

Shudha vrana : The wound which is free from the three vitiated doshas, has bluish margin, healthy granulation tissue on level and has no pain or discharge.

Dusta vrana : Ulcer having an excessively narrow or wide mouth, excessively indurated or soft ulcer, excessively elevated or depressed, very cold or very hot, having any one of these colours- black, red, yellow or white etc, fierce looking full of pus and sloughing muscle, vessels, ligaments, etc; associated with a discharge of putrifying pus, having tortuous tracks or multiple pockets; having an unpleasant appearance and smell with severe pain; burning sensation, suppuration, redness, itching, oedema and complicated with vesicles all around, excessive discharge are known as dusta vrana.

Ruhyamana vrana : Wound with pigeon colored margin without any discharge, which is non progressive and is surrounded by epithelium should be considered as a healing wound.

Samyak rudha vrana : The wound whose floor has healed up, which is not indurated any more, is not swollen or painful, is of the same colour and is at the same level as the skin should be considered to have healed properly.

Wound healing

It is the response of the body towards an injury, involving the interaction of the cells and molecules resulting in complex series of events that change the morphology and characteristic of the wounded area, in an attempt to restore the structure and function near to normal.

Types of wound healing

1. **Category 1/ primary healing / healing by 1st intention**
 - Occurs within 24 hours of injury prior to the development of granulation tissue.
 - Indications- recent, clean tension free wound with viable tissue and achievable approximation and eversion of the skin margins.
 - Wound is closed by approximation of margins or graft or flap replacement.
2. **Category 2/ delayed primary healing**
 - Occurs in contaminated wounds, where wound closure is delayed.
3. **Category 3/secondary wound healing/healing by 2nd intention**
 - Occurs in full thickness wounds, resulting in intense inflammation,
 - Large quantity of granulation tissue formation
 - Pronounced wound contraction.
4. **Category 4**
 - Occurs especially in partial thickness wounds
 - The epithelisation process is predominant.

Phases of wound healing- the clinical staging of wound healing is-

1. Latency phase- from day 1 to day 3.
2. Proliferation phase- from the 4th day to 7th day.
3. Repair phase- from the 8th day.

When a wound occurs, the body responds with a predictable series of events to repair the damage and this response can be divided into 3 distinct bio-chemical and histopathological phases—

1. **Initial phase-** Haemostasis
2. **Catabolic phase-** Inflammation
3. **Anabolic phase-** Repair, Remodelling

1. **Haemostasis**
 - Takes seconds to hours.
 - Platelet aggregation at damaged endothelium.
 - Generation of the platelet plug.
 - Release of a number of signaling molecules e.g. PGDF (platelet derived growth factor), TGF- β (Transforming growth factor) etc.
 - Attraction of inflammatory and reparative cells.
2. **Inflammation**
 - Starts within 6 to 8 hours and continues upto 2 to 5 days.
 - Characterized by rubor, calor, dolor, tumor.
 - Secondary acidosis, tissue hypoxia, cell necrosis with mediation of mitogenic substances.
 - Acts to contain, neutralize or dilute the injury causing agent.
 - PMNs (polymorphonuclear neutrophils) are the first inflammatory cells recruited and arrive within 24 hrs of injury.
3. **Repair**
 - Takes days to weeks, starts from 2nd day and continues upto 3 weeks.
 - Gain in tensile strength.
 - Characterised by increased cell proliferation, capillary budding and synthesis of ECM (Extra cellular matrix).
 - Involves 3 processes— 1. Granulation 2. Contraction 3. Epithelisation
4. **Remodelling**
 - Starts after 3rd week and continues for years.
 - Starts when collagen production equals degradation.
 - Principal cells are fibroblasts.
 - Major goal is to reduce excessive amount of ECM and align it through contraction and provide tensile strength to the wound.
 - Involves 3 changes-
 1. soft friable collagen fibrils are converted to insoluble elastic fibres.
 2. embryonic active fibroblasts mature into adult resting fibrocytes.
 3. devascularisation.

The crucial factor for undisturbed wound healing is the maintenance of physiological partial pressure of oxygen in the tissue of wound area. Studies show that the synthesis of collagen is stopped below a critical O_2 tension.

It has also been proven that peak of oxygen consumption in the individual phase of wound healing corresponds to the production of glycoproteins, proteoglycans and various collagen types. But there is a brief "physiological hypoxia" only in the early phase of healing which acts as a stimulus for mitogenic substances and without which angiogenesis is scanty. Hypoxia and hypovolemia both are risk factors for wound healing and infection.

In all stages of wound healing, normal oxygen tissue tension is a predilection for wound sterility and uncomplicated tissue repairs. On the other hand, oxygen deficiency leads to a disturbed high performance metabolism with overshoot mechanism as- scar keloids.

In longer term hypoxia is present during the course of healing, the regeneration pro

cesses gradually come to halt. Tissue repair stagnates and a simultaneous wound infection leads to a reduction of O_2 via the oxygen consuming phagocytosis. Consequently, the clearance function of phagocytic cells is exhausted and development of static and torpid wounds which sometimes persists over decades.

Wound assessment

A written record and picture of the progress of the wound—is a cumulative process of observation, data collection, and evaluation. As such, it's an important component of patient care. A wound assessment includes a record of its initial assessment, ongoing changes, and treatment interventions. This initial assessment serves as the baseline for future comparisons, with ongoing assessments occurring throughout the healing process.

Elements of a wound assessment

1. Location and age of wound
2. Wound size and stage
3. Wound measurement
4. Exudate and odour
5. Surrounding skin
6. Wound bed tissue
7. Draining Lymph nodes

Principles of management of vrana

Debridement is the removal of necrotic tissue, exudate, bacteria, and metabolic waste from a wound in order to improve or facilitate the healing process. Accumulation of necrotic tissue usually results from poor blood supply, a prolonged inflammatory process, bacterial damage, or an untreated cause of the wound (for example, increased interstitial pressure, or other mechanical, chemical, or traumatic injury). In otherwise healthy people, natural debridement keeps pace with the accumulation of dying tissue in a wound. The removal of this tissue is necessary to reduce the biological burden of the wound in order to control and prevent wound infection, especially in deteriorating process.

Wound Debridement methods.-

Mechanical debridement

Methods of mechanical debridement include wet-to-dry dressings, hydrotherapy, and wound irrigation. Mechanical debridement may be more painful than other debridement methods. All of the mechanical methods are nonselective; that is, they don't always discriminate between viable and nonviable tissue. Mechanical methods may be harmful to healthy granulation tissue on the surface of the wound and lead to bleeding, trauma, and disruption of the collagen matrix along with the necrotic tissue.

Sharp/surgical debridement

Sharp/surgical debridement includes the use of a scalpel, forceps, scissors, hydrosurgery devices, or LASER to remove dead tissue. Sharp debridement is considered the 'gold standard' of

debridement by many clinicians. It can cause pain so a topical anesthetic, such as lidocaine cream or gels, may be required.

Enzymatic debridement

Enzymatic debridement is accomplished by applying topical enzymatic agents to devitalized tissue. These agents will digest and dissolve necrotic tissue in the wound bed through breaking down collagen, elastin, and other parts of the abnormal devitalized wound matrix. Enzymes that act on necrotic tissue are categorized as proteolytics, fibrinolytics, and collagenases, depending on the tissue component they target. Because papain urea enzymatic debriding agents target eschar, they are often used on wounds with necrosis. Collagenases target nonviable collagen tissue while sparing viable.

Autolytic debridement

Autolytic debridement uses the body's endogenous enzymes to slowly remove necrotic tissue from the wound bed. In a moist wound, phagocytic cells and proteolytic enzymatic enzymes can soften and liquefy the necrotic tissue that is then digested by macrophages. Autolytic debridement can be facilitated with appropriate dressings in the superficial wound that contains little necrotic tissue, or a larger, deeper pressure ulcer.¹ Underlying these concepts is a requirement of adequate circulation and nutrition. This method of debridement is contraindicated in infected wounds.

Maggot therapy (biological or larval therapy)-

In this type of debridement, several applications of sterilized medicinal *Lucilia sericata* (greenbottle fly) maggots are placed in the wound bed every 2 to 3 days. The specific application technique for how the maggots are actually put in the wound varies. Some place the maggots directly into the wound so they can roam around (free-range) and others place the maggots contained in a device such as a pouch or tea bag-like sack. The mechanism by which maggot therapy works is believed to be by the enzymes the maggots secrete. These substances are proteinases that degrade the necrotic tissue.⁴⁷ The maggots also digest bacteria making them effective in wounds with resistant bacterial strains.^{48,49} Maggots also encourage healing simultaneously by stimulating granulation tissue.

Acharya Sushruta has described 60 procedures for the management of vrana. They are as follows –

1. Easily digestible-light nutritive food (apatarpana)
2. Application of paste (alepa)-as Dashang lepa
3. Spraying (pariseka)-as Triphala kwatha
4. Anointing (abhyanga)- of sneha
5. Fomentation (sveda)-to reduce inflammation
6. Gental massage (vimlapana)- by finger
7. Application of poultice (upanaha)-by ushna dravya
8. Induction of suppuration (pachana)-as sumag
9. Blood-letting (visravana)- by leech as in Arterial ds.
10. Internal oleation (snehapana)- of Ghrita
11. Medicated Emesis (vamana)- by Panchtikta ghrita

12. Medicated-Purgation (virechana)- by Triphala kwatha
13. Excision (chedana)- of swellings as cyst, lipoma
14. Incision (bhedana)- of swellings like abscess
15. Bursting by medication (darana)- by Kshara
16. Scraping (lekhana)- by sharp instrument
17. Probing (esana)- of fistulous tract
18. Extraction (aharana)-of retained foreign body
19. Drainage by puncturing (vyadhana visrayana)-in hydrocele
20. Suturing (sivana)- to approximate edges by thread
21. Approximation of wound edges (sandhan)- by clipping etc.,
22. Squeezing out (pidana)- as bark or root of Picchila dravya, Yava, Godhuma etc
23. Haemostasis (shonitasthapana)-by pressure bandage, by ligating the vessel.
24. Cooling applications (nirvapana)-by sheetal Dravya
25. Warming applications (utkarika)-by Kakolyadi Gana
26. Medicinal debridement (kshaya)-Panchvalkal Kwatha
27. External use of vicks (varti) – Kshara Varti
28. External use of pastes (kalka) – of sodhana dravya
29. External use of medicated ghritas (sarpi)as Jatyadi ghrita,
30. External use of oils (taila)- Jatyadi taila
31. External use of thickened extracts (rasakriya)- as Triphla.
32. External use of dusting powder (avchurnana)as Neomycin powder
33. Fumigation of wound (vrana dhupana)- by infra-red light, bark of Srivestak, Saral etc
34. Procedure for elevating (utsadana)-by Aswagandha, Apamarga etc
35. Procedure for depressing (avsadana)as in case of hypergranulation by Cupric sulphate.
36. Softening procedure (mridu karma) – by vatghna dravya
37. Hardening procedure (daruna karma) – by Triphla, Lodhra, ral
38. Application of caustics (kshara karma) as in dusht vrana
39. Thermal cauterization (agni karma) – Cauterization for Haemostasis
40. Pigmentation procedure (krishna karma) – by Salsardi Gana
41. Depigmentation procedure (pandu karma) – by Rohiniphal
42. Restoration of normal skin color (pratisarana)-Egg shell, Mūlathi, Niramali, Mukta Shukti & Gomutra
43. Encouraging regrowth of hair (romsanjana) – Oil of Bhilawa, Snuhi
44. Depilation (lomapaharana)- by LASER in Pilonidal sinus
45. Enema (basti karma)as Jatyadi taila basti
46. Douching and irrigation (uttarbasti karma)-by Panchvalkala kwatha
47. Bandaging (bandhan)- to cover the wound
48. Covering by leaves (patradana) – to cover the wound
49. Disinfection (krimighna) – as Antibiotics, Neem , Shigru, Rasanjana
50. Restorative measures (brinhana)- Bala, Amalaki, Shatavari
51. Neutralization of poison (vishaghna)-Detoxifying drugs- Shirish
52. Use of errhines (shirovirechana)- Teekshna dravya
53. Nasal medication (nasya)- of sneha
54. Gargling (kavaldharan) – of antiseptic solutions

55. Fumigation(dhuma) – Method of sterlising the wound
56. Internal use of honey(madhu) - for wound healing
57. Internal use of ghritha (sarpi)-as Triphala ghritha
58. Instrumentation (yantra)as to remove foreign body
59. Dietary regimen (ahara)-Nutritive diet
60. Protective measures (rakshavidhana) – by dhupan and Pranayam mantra

Management of Agantuja vrana –

Immediate treatment – In case of wound created by exogenous factor immediate treatment aims at pacifying the heat and managed as aggravated pitta. In recent traumatic wounds astringent, sweet, cold and demulcent procedure should be adopted for a week. Madhu- ghritha promotes the union. An oil processed with sandal wood, padmaka (*Prunus cerasoides*), lodhra (*Symplocos racemosa*), utpala (*Nymphaea nouchali*), priyangu (*Callicarpa macrophylla*), turmeric, madhuka (*Glycyrrhiza glabra*) and milk is the best for wound healing.

Later stage treatment – In later stage the management should be aimed at subsiding the vitiated doshas and the wound is managed as doshaj vrana.

General management of Agantuja vrana –

In Chinna, Bhinna, Vidha and Kshataja vrana there will be excessive bleeding which results into vata prakopa which produce severe pain. Hence vata shamana treatment is adopted. Irrigation of wound snehas and snehas are given by mouth also.

Poultices of vesavara and krsara with sufficient sneha. Sudation by dhanya method and oily paste.

Oily enemas processed with vata alloying drugs.

- In Pichchita and ghritha vrana there will be less bleeding and pitta prakopa is seen leading to burning sensation followed by suppuration. Hence pitta shamana treatment has to be adopted i.e. cold external application and irrigation.
- Chinna vrana - Re uniting of partially or completely excised part has to be tried.
- Bhinna vrana - Management according to involved ashaya based on exploration and Nishkranta antra pravesha.
- Viddha vrana –

Shira viddha

Bala varti prayoga.

Sneha varti prayoga.

- Kshataja vrana – Madhu, ghritha, taila abhyanga.
- Pichchita vrana – Bhagna sandhana vidhi.
- Ghritha vrana - Madhu, ghritha seka, Avachurnana.

All Agantuja vranas after seven days are to be treated on the principles of Nija vrana chikitsa.

Vrana chikitsa depending on the stage of vrana

Depending on the stage of vrana, Acharya Sushruta has recommended sixty procedures

(Shasti upakramas).

In an established vrana the principle of treatment involved is to replace the lost tissue which is termed as Ropana. But before Ropana of a Vrana one has to ensure whether the vrana is healthy or not.

To have healthy state of wound it has to under go Shodhana process. Many drugs have been mentioned for Shodhana and Ropana karma. Majority of drugs both shodhana and ropana properties. For shodhana and ropana karma specific drugs can be used in different forms like Kashaya, varti, kalka, ghrita, taila, rasakriya and avachurnana. In which form the drug is to be used will depend on the type of vrana and the drug being used. So Shodhana and ropana play important role in Vrana chikitsa.

Vrana sodhana-

Aaragbhadhi gana- Aaragbadh (*Cassia fistula*), Nimba (*Azadirachta indica*), Guduchi (*Tinospora cordifolia*), etc
Arkadi gana- Arka (*Calatropis procera*), Alarka (*Calatropis gigantia*), Karanja (*Pongamia pinnata*), Apamarga (*Achyranthes aspera*) etc
Sursadi gana- Surasa (*Ocimum sanctum*), kakmachi (*Solanum nigrum*), Vidanga (*Embelia ribes*), Nirgundi (*Vitex nigundo*) etc
Lakshadi gana- Laksha, Haridra (*Curcuma longa*), Daruharidra (*Berberis aristata*) etc

Vrana ropana -

Priyangwadi gana- Priyangu (*Callicarpa macrophylla*), Dhataki (*Woodfordia fruticosa*), Lodhra (*Symplocos racemosa*), etc
Ambsthadi gana- Patha (*Cissampelos pareira*), Madhuka etc
And Guduchi, Aswagandha (*Withania somnifera*), peepal (*Ficus religiosa*) etc,

Removal of slough

- Application of teekshna & ushna dravyas.
- Application of kshara or kshar varti or kshara sootra.
- Magatification.
- Chedana karma by Shastra.

Important formulations in vrana chikitsa

Internal medication

Ghrita : Guggulu tiktaka ghrita

Guggulu preparations: Saptavimshathi guggulu, Saptanga guggulu, Triphala guggulu, Amrutadhi guggulu, Shigru guggulu.

External medications

Ghrita yogas: Jatyadi ghrita, Gouradhya ghrita, Karanjadi ghrita, Yastimadhu ghrita

Taila yogas : Doorvadhi tail, Vrana viropana tail, Vajraka tail

Kashayas : Aragvadadhi, Surasadhi, Nyagrodadhi

Kshara karma -

Acharya Sushruta has mentioned kshara karma in 60 upkrama given for wound management. Because of its properties, kshara is used in different manners for proper debridement and proper healing of the dusht vrana. It can be used in form of pratisarniya kshara, as kshara varti and

kshara sootra placed or packed into the infected wound. Kshara varti or the kshara sootra lead to the lekhan of the infected wound along with shodhan and ropana.

The Effect of Kshara on Local Tissue

As per local drug delivery system is concerned, it is advocated that the drugs are directly delivered in local pathological tissue planes and the Kshara and other materials exert effect on the tissue directly so that the chemical reactions take place which enhance the effect of degeneration and lysis of unwanted/unhealthy tissue. Subsequently, the tissue reaction takes place owing to caustic/irritant agents present in Kshara Sootra. The degeneration in the tissue leads to necrosis to form a gap that triggers to inflammatory process and the healing process at the end.

The kshara sootra or the varti applied cause early necrosis of the unhealthy tissue with active granulation along with capillary formation, fibroblastic proliferation and collagen formation leading to epithelial hyperplasia. Thus, it thereby promotes the process of healthy healing.

So, in case of indurated, itching and chronic wounds which are hard to clean and have raised granulation tissue, cleansing by the application of kshara should be done.

Acharya Charak has also mentioned the importance of kshara karma. He has written in chapter 15 of chikitsa sthana that a physician should use kshara in cases where use of surgery or agni karma is not helpful but kshara should be used keeping in mind doshas and the disease.

Poorva karma (preoperative measures)

- The patient is given prophylaxis against Tetanus i.e. 0.5 ml of tetanus toxoid.
- The patient experiencing excessive anxiety should be administered an mild anxiolytic drug before the procedure.

Pradhana karma

- Place the patient in the required position.
- Local anaesthesia can be used as per requirement.
- Irrigate the wound or cleaning the wound with NS.
- Use Ksharsootra varti\ ksharodak soaked packing over infected wound.
- Alternatively dry kshara could also be sprinkled over the infected wound.
- Apply the dressing.

Post operative care and prescription

- Dressing is removed next morning.
- Again the same procedure is repeated as per requirement or the condition of the patient's wound, till it becomes a clean wound.

Shigru guggulu - 2 tablets × TDS
Amalaki churna - 5 grams BD

दुष्टरक्तातिमात्रत्वात् स वै शीघ्रं विदहते ।

ततः शीघ्रविदाहित्वा द्विद्विधीत्यभिधीयते ।

त्वग्रक्तमांसमेदासि प्रदूष्यस्थिसमाश्रिताः ।

दोषाः शोफं शनैर्घोरं जनयन्त्युद्धिता भृशम् ।

(च. सू. 17/95)

महामूलं रुजावन्तं वृत्तं चाप्यथवाऽयतम् ।
तमाहुर्विद्वद्भिर्धिर विज्ञेयः स च षड्विधः ॥

(सु. नि. 9/4-5)

व्रणो द्विधा निजागन्तुदुष्टशुद्धविभेदतः
श्वेतोऽवसन्नवत्माऽतिस्थूलवर्ण्योऽतिपिञ्जरः ।
नीलश्यावोऽतिपिडको रक्तः कृष्णोऽतिपूतिकः ।
रोम्यः कुम्भी मुखश्चेति प्रदुष्टा द्वादश व्रणाः ॥

(वा0उ0 25/1)

(च. चि. 25/24-25)

त्वडमांसतिसरास्नाय्वस्थिसन्धिकोष्ठमर्माणीत्यष्टौ व्रणवस्तूयिज्ञं

(सु. सू. 22/3)

त्रिभिर्दोषेसानाक्रान्तः श्यावौष्ठः पिडकीसमः ।
अवेदनो निरास्त्रावो व्रणः शुद्ध इहोच्यते ॥

(सु. सू. 23/18)

तत्रापि संवृतो दुष्टव्रणलिंगानि ।

(सु. सू. 22/7)

तस्य व्रणस्य षष्टिरूपक्रम भवन्ति ।
तद्यथा अपतर्पणमालेपः परिषेकोभ्यंग स्वेदो
विम्लापनमुपनाहः पाचनं विस्त्रावणं स्नेहो वमनं विरेचनं
छेदनं भेदनं दारणं लेखनमेषणमाहरणं व्यधनं
विस्त्रावणं सीवनं सन्धानं पीडनं शोणितास्थापनं निर्वापणमुत्करिका
कषायो वर्तिः कल्कः सर्पिस्तैलं रसक्रियाऽवचूर्णेन
व्रणधूपनमुत्सादनमवसादनं मृदुकर्म दारुणकर्म क्षारकर्मग्रिकर्म
कृष्णकर्म पाण्डुकर्म प्रतिसारणं रोमसंजननं लोमपाहरणं
बस्ति कर्मोत्तर बस्तिकर्म बन्ध पत्रादनं कृमिघ्नं बृहणं
विषघ्नं शिरोविरेचनं नस्य कवलधारणं धूमोमधु
सर्पिर्यन्त्रमाहारो रक्षाविधानमिति ।

(सु. चि. 1/8)

अल्पावशिष्टे कृमिभक्षिते च लिखेत्ततोऽग्निं विदधीत पश्चात् ।

(सु. चि. 18/38)

आरब्धमदनगोपधोण्टाकण्टकीकुटजपाठापाटलामूर्वेन्द्रयवसप्तपर्णनिम्बकुरुण्टक
गुडूचीचित्रकशार्डप्टकरंजद्वयपटोलकिराततिक्तकानि सुषवी चेति ।

(सु. चि. 38/6)

अर्कालर्ककरंजद्वयनागदन्तीमयूरकर्भागीरास्नेन्द्रपुष्पी
क्षुद्रश्वेतामहाश्वेतावृश्चिकाल्यलवणास्तापसवृक्षश्चेति ।

(सु. चि. 38/16)

सुरसाश्वेतसुरसाफणिजझकार्जकभूस्तृणसुगन्धकसुमुखकालमालकासमर्दक्षवक
खरपुष्पविडंग कटफलसुरसीनिगुण्डीकुलाहलोन्दुरुकर्णिका
फंजीप्राचीबलकाकमाच्यो विषमुष्टिकश्चेति ।

(सु. चि. 38/18)

प्रियंगुसमंगाधातकी पुन्नागनागपुष्पचन्दनकुचन्दन्मोचरसरसांजन
कुम्भीकस्त्रोतोजनपद्मकेसरयोजनवल्लयो दीर्घमूला चेति ।

(सु. चि. 38/45)

अम्बष्ठाधातकीकुसुमसमंगाकटवंगमधुकविल्वपेषिकासाररोध्नपलाशनन्दीवृक्षाः पद्मकेशराणि चेति ।

(सु. चि. 38/46)

CHAPTER – 9

APPLICATION OF KSHARA SOOTRA IN PILONIDAL SINUS

Introduction

Acharya Sushruta, father of surgery. He has given the description in detail regarding the nadi or sinus in the chapter of "Visarpa nadi stanaroga nidana" 10th chapter of Sushruta samhita nidana sthana. He recommended that if inflammatory swelling is ignored even during the stage of suppuration then it may result in chronic granulating tract, termed as 'Nadi' which is likened to test tube. In which the exudative material remains in movement there in.

Moreover, if such suppurative swellings is neglected and not managed properly by shalya karma in good time, will be responsible for the persistence of chronic nadi (sinus).

In addition Acharya Sushruta has advocated that any retained or hidden foreign body in such chronic granulating tract of discharging nature will also be responsible for persistence of (sinus) nadi.

Nadi vrana is broadly of two types –

- i. Doshaja (Acquired)
- ii. Agantuja (Traumatic)

Pilonidal Sinus

The term pilonidal sinus describes a condition found in the natal cleft overlying the coccyx consisting of one or more, usually non infected, midline openings which are communicated with a fibrous track lined by granulation tissue and containing hairs lying loosely within the lumen.

It was first described by Anderson in 1847. The term pilonidal sinus is given by Hejris in 1880. The condition seems to have incidence greatly in frequency in Angle American services personnel during the second world war. Many of these individuals had done a fair amount of traveling in jeeps which led some writers to refer to pilonidal sinus as jeep disease.

Other sites of pilonidal sinus formation

For many years pilonidal was thought to be a lesion confined to post anal region. This is also found in hand, axilla, perineum, umbilicus, suprapubic region.

Aetiology and pathology –

Although acquired theories of development are better accepted than the more historical congenital theories, exact mechanism of development are speculative. Evidence that support the acquired theory of origin of pilonidal sinus can be summarized as follows –

- Interdigital pilonidal sinus is an occupational disease of hair dresser within the interdigital cleft or clefts being the customers. Pilonidal sinuses of the axilla and umbilicus have also been reported.
- The age incidence of appearance of pilonidal sinus (82% occur between the age of 20 and 29 years) varies with age of onset of congenital lesions.
- Hair follicles have almost never been demonstrated in the walls of the sinus.
- The hairs projecting from the sinus are dead hairs with their pointed ends directed towards the blind end of the sinus.
- The disease mostly affects men in particularly hairy men.
- Recurrence is common even though adequate excision of the track is carried out.

It is thought that the combination of buttock friction and shearing forces in that area allows shed hair or broken hairs which have collected there to drill through the midline skin, or that infection in relation to a hair follicle allows hair to enter the skin by the suction created by movement of buttocks, so creating a subcutaneous, chronically infected midline track. From this primary sinus, secondary tracks may spread laterally which may emerge at the skin as granulation tissue lined discharging openings. Usually but not invariably the sinus runs cephalad.

Clinical features –

This condition is seen much more frequently in men than women, usually after puberty and before fourth decade of life and is characteristically seen in dark haired individuals rather than those with softer blonde hair.

A post anal pilonidal sinus seldom presents itself till infection has supervened. A typical history is that a young adult develop an abscess at the base of spine which bursts or is opened by doctor. The discharge then ceases after a few days, though a nodule of induration may persist for a week or year. The patient remains well for several weeks or months till another abscess occurs and the same course is repeated. He may have several recurring abscesses in this way before the condition is correctly diagnosed.

The primary sinus may have one or many openings all of which are strictly in midline between the level of sacrococcygeal joint and the tip of coccyx.

On examination, the findings in the postanal region are very characteristics. Situated accurately in the midline some 5 cm or so behind the anus there is an opening or a series of opening placed close together or spread out over a distance of 2-3 cms.

Primary track

This is common in the stain lined orifice and extends in a subcutaneous tissue in a headward direction for a distance of 2-5 cm



Hairs –

Projecting from sinus opening or lying in the primary track.

Diagnostic triad for pilonidal sinus

It is made by diagnostic triad.

- i. History taking
- ii. Physical examination
- iii. Supportive investigations in relation to pilonidal sinus.

i. History taking –

Pilonidal sinus was common among jeep riders in the 1935-45 war. That's why it became known as 'jeep bottom'.

- a. Age – 82% pilonidal sinus patients are between the age of 20 and 29 years.
- b. Sex – in hairy males incidence of pilonidal sinus is quite common (male : female 4:1).
- c. Occupation – hairdressers mostly suffer from interdigital pilonidal sinus.
- d. History of repeated abscess in sacro -coccygeal region.

ii. Physical examination –

Local examination

a. Inspection –

- Visible sinus tract or pits in the sacro coccygeal region.
- Visible tuft of hairs in the opening.
- Swelling in sacro coccygeal region.
- Inflammation

b. Palpation –

- Tenderness will be present.
- It can be palpated as an area of deep induration beneath the skin in sacro coccygeal region containing tracts.

c. Probing –

- Probing helps in determining the branching of the tract i.e. if there are one, two or otherwise multiple opening, relation if any to the neighbouring bones e.g. sacrum, coccyx.
- The direction of tract is determined with probing and extent of track, position of internal opening.
- The relation of the internal opening to the sacro coccygeal region is also found.

iii. Supportive investigations –

- ✓ i. X-ray lumbo sacral spine – to rule out any spinal abnormality.
- ii. Sinogram – to detect the path of sinus and its tract.
- iii. Pus culture and sensitivity test
- iv. Biopsy – to rule out any malignant growth.

Diagnosis –

The diagnosis is confirmed by observing the typical skin lined sinus opening in the midline of postanal region often with secondary opening higher upon one or other side.

Treatment –

i. Non pharmacotherapy

ii. Pharmacotherapy

iii. Parasurgical

iv. Surgical procedure

1. Non pharmacotherapy –

a. Aahar

b. Vihar

a. Aahar –

i. Nidana parivarjana – The aetiological factors of nadivrana must be avoided.

ii. Saktu (paste of flour), vilepi (thick gruel), kulmash (cooked pulses) should be consumed.

iii. Balamulaka (Reddish), karavellak (Bittergourd), dadima (Pomegranate), Amalaka (goose)

should be fried in ghrita added with saindhav lavan.
Little quantity of porridge prepared from old rice helps in quick healing of vrana.

Vihara –

To avoid excessive sitting or long driving.

To maintain proper hygiene of natal cleft area which included shaving of hairs of natal cleft.

Sitz bath –

It mainly reduces pain which occurs after kshara sootra ligation and reduces inflammation

(hot fomentation).

Pharmacotherapy –

a. **Phytotherapeutic drug –**

Drugs used for pana –

- Khadiradi kwath (Y.R. and B.R. 51/3)

- Trikatu, vacha, hingu, panchlavan, powder of ajawayan with kultha. (Su. Chi. 81/38)

Guggulu – Navkarshika guggulu (Y.R. Ckd. Shi and B.R. 51/28)

Saptavinshati guggulu (Y.R. Ckd. Chi and B.R. 51/29)

Drugs which helps in shodhana and ropana of wound –

- Jyotishmati (*Celastrus panniculatus*), Langali (*glorisa superba*), Danti (*Baliospermum montanum*), Trivrita (*Operculina turpenthum*), Kushtha (*Saussurea lappa*), Tilvak (*Symplocos racemosa*), Kshiri varga. (Su. Chi. 8/39)

b. **Chemical therapeutic drugs –**

- Appropriate antibiotic

- Anti-inflammatory drugs (if abscess occurs in sinus).

Parasurgical –

These methods aid to surgical procedure as

1. Kshara karma (chemical cauterization)

2. Agni karma (cauterization)

3. Varti (medicated wick)

Agnikarma –

Cauterization is better than caustic alkalies application because it rule out disease by burning, thus preventing them from recurring.

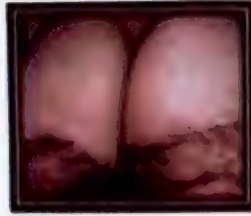
Agnikarma is applied by heated shalaka made up of different metals having suitable length, thickness and shape.

LASER epilation in case of pilo-nidal is also used for the epilation of thick hair in the natal cleft.

Kshara karma –

It does the chemical cauterization of tract and has some role in preventing the recurrence of disease by debriding and healing the wound with healthy granulation tissue.

Technique of kshara sootra karma



Poorva karma

- Informed and written consent is obtained.
- Preparation of the part is done by shaving and painting.
- Tetanus prophylaxis is given.
- Xylocaine sensitivity is done.
- Enema is given to clear the bowel.

Premedication –

Injection Promethazine hcl is given half an hour before the procedure to calm down patient i.e. sedation without depression.

Position –

The procedure is done in lying position and for this, two positions have been given in texts

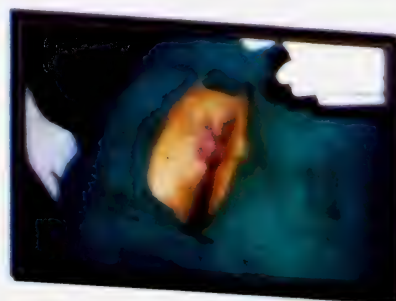
- Prone position with the sacrococcygeal region elevated by pillow or angulation of table. It is also known as the Jack Knife position.
- Left lateral position, with the buttocks projecting slightly beyond the edge of the table

Operative field preparation and draping –

The skin is prepared by painting with iodine chlorhexidine or some other skin antiseptic and a gauze piece or cotton wool soaked in alcoholic solution of chlorhexidine is placed over anus to minimize the risk of contamination from this source during the operation.

Draping with sterile linens is then done, care being taken to the skin immediately before the anus as a further precaution against sepsis. The assistant stands on the opposite side of table and by firm traction with the fingers of both hands elevate the uppermost buttock rendering the internal skin tense.

If the patient is in prone position then adhesive tape is applied on the lateral part of buttocks and by stretching the buttocks, tape is fixed with the table on the other end so that skin is stretched.



Anaesthesia –

This procedure is most conveniently performed under GA. It can also be done under local anaesthesia with lidocaine with adrenaline 4-7 mg/kg body weight. In this study local anaesthesia is preferred with infiltration of anaesthesia around the sinus in different planes deep upto the natal cleft.



Procedure –

Remove the visible hairs firstly and also remove the bad debris with pus from the sinus to make it ready for probing.

Step 1- Probing

Methylene blue dye is injected through the external openings to stain the sinus tracks and its offshoots. Probing of the sinus is done to locate the track and its branches. Care must be taken not to create a false tract. A pinpointed director is now introduced through the external opening deep upto the sacrococcygeal cleft or wherever the probe negotiates without much hindrance.



Step 2 – Widening of the opening

Now the external opening is widened with the help of artery forceps in the direction of the probe. Widening is done enough so that one can visualize well into the sinus. Visualized hairs/trichobezoars are removed.

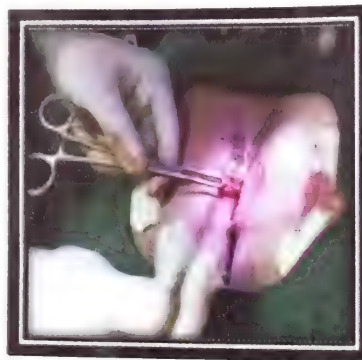


Step 3- Curettage

Unhealthy granulation tissue along with the impacted hairs is curetted well with a Volkmann's spoon.

Step 4 – Trimming of the edges

Trimming of the edges of the wound is done to promote proper drainage and subsequent healing.

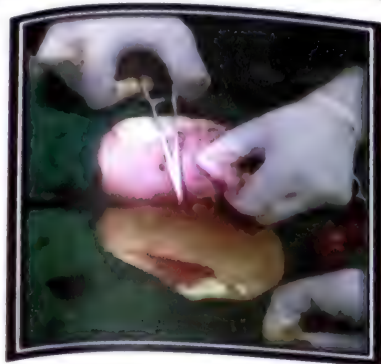


Step 5 – Application of kshara sootra

The kshara sootra application is done through the sinus tract deep into the natal cleft and taken out through the secondary opening, if present or external opening is made in the dependent part where pus collection is expected. The kshara sootra is taken out through that opening and a loose ligature is applied. The free ends of kshara sootra are placed into the sinus cavity for action of kshara sootra.

After giving NS wash, wound is mopped and the cavity is packed with the gauze soaked with a weak iodine solution and bandage is applied.





Pashchat karma –

Antiseptic dressing is done daily in first week.

Kshara sootra is changed after 1 week by rail-road technique and tightened. This is done for 4 weeks or till the wound heals.

Triphala guggulu 2 TDS.

Varti (medicated wick)

This consists of Haridra, aragvadh (Cassia fistula), agaru (Aquilaria agallocha) with madhu and ghrita. It does shodhan and ropana of track.

Application of Varti in Acute Pilonidal Sinus

This should be drained by excising an ellipse where the pits of sinus might be present. These pits will be surrounded by oedema and redness. After the wound has become free from infection by repeated cleansing, administration of systemic antibiotics and dressing, one should attempt proper excision of the sinus and its ramifications.

Acharya Sushruta has advocated the use of varti in case of Bhagandara chikitsa.

Acharya Chakradatta has also mentioned another type of varti which is prepared by mixing snuhi latex, kshara and haridra powder. The varti is inserted inside the bhagander gati (tract). It may act by cauterizing the fistulous tissue and draining the track.

The description of use of varti in nadi (sinus) is well documented in Bhaishajya Ratnavali.

Poorva karma

Preparation of the part by shaving and painting with antibiotic solution.

Tetanus prophylaxis is given.

Xylocaine sensitivity is done.

Enema is given to clear the bowel.

Premedication –

Injection Promethazine hcl is given half an hour before the procedure to calm down the patient i.e. sedation without depression.

Position –

The procedure is done in lying position and for this, two positions have been given in the texts – Prone position with the sacrococcygeal region elevated by pillow or angulation of the table. It is also known as the Jack Knife position.

Left lateral position with the buttocks projecting slightly beyond the edge of the table.

Operative field preparation and draping –

The skin is prepared by painting with iodine chlorhexidine or some other skin antiseptic and a gauze piece or cotton wool soaked in alcoholic solution of chlorhexidine is placed over the anus to minimize the risk of contamination from this source during the operation.

Draping with sterile linens is then done, care being taken to the skin immediately behind the anus as a further precaution against sepsis. The assistant stands on the opposite side of the table and by firm traction with the fingers of both hands elevate the uppermost buttock and rendering the internal skin tense.

If the patient is in prone position then adhesive tape is applied on the lateral part of the buttocks and by stretching the buttocks tape is fixed with the table on the other end so that the skin is stretched.

Anaesthesia –

This procedure is most conveniently performed under GA. It can also be done under local anaesthesia with lidocaine with adrenaline 4-7 mg/kg body weight. In this study local anaesthesia is preferred with infiltration of anaesthesia around the sinus in different planes deep upto the natal cleft.

Procedure –

Remove the visible hairs firstly.

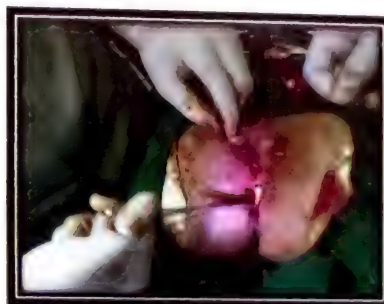
Step 1- Probing :- Methylene blue dye is injected through the external openings to stain the sinus tracks and its offshoots. Probing of the sinus is done to locate the track and its branches. Care must be taken not to create a false tract. A pinpointed director is now introduced through the external opening deep upto the sacrococcygeal cleft or wherever the probe negotiates without much hindrance

Step 2 – Widening of the opening :- Now the external opening is widened with the help of artery forcep and the direction of the probe. Widening is done enough so that one can visualize well into the sinus. Visualized hairs/trichobezoars are removed.

Step 3- Curettage :- Unhealthy granulation tissue along with the impacted hairs is curetted well with a Volkmann's spoon.

Step 4 – Trimming of the edges :- Trimming of the edges of the wound is done to promote proper drainage and subsequent healing.

Step 5 – Placing the varti :- The NS wash is given and the varti application is done through the sinus tract deep into the natal cleft for chemical debridement and cauterization. The 'T' bandage is applied.



Placing the varti in tract

Pashchat karma -

Antiseptic dressing is done daily.

Triphala guggulu 2 TDS

The varti is changed after 1 week. This is done till the wound heals completely.

Antibiotics after culture and sensitivity test.

Sclerotherapy -

The method of treating pilonidal sinuses is by injecting phenol to destroy the epithelium of track and sterilize the cavity in hope that after extrusion of the hairs the sinus would heal. A short general anaesthesia is required.

Patient has to be in prone jack knife position with the sacrum horizontal. The skin has previously been shaved, with particular attention to the natal cleft. It is now cleansed with spirit and area is towelled off, a pad of cotton wool being placed over the anus.

An area of skin approximately 15 cm in radius around the sinus is generously smeared with petroleum jelly to protect it from inadvertent overflow of phenol.

The main sinus and its side tracks are gently probed, particular care being taken that no new tissue planes are opened up and a blunt nosed coned needles (such as is employed for injecting into ureteric catheter in retrograde pyelography) is inserted firmly into the orifice of main track, its shape securing for it a very snug fit. Pure phenol is then injected slowly without pressure until the fluid is seen to issue from all the side openings. Excess is immediately wiped away from the surrounding skin. The phenol is left in situ for about a minute, the needle is then withdrawn and the tissue together with loose hairs and debris is expelled by pressure to over the track. This injection expression sequence is repeated until the total period of contact of the tissue with phenol is approximately 3 minutes after which the fluid is finally expressed. The orifice of the sinus is usually blanched by the phenol but if this has not occurred the area of skin surrounding the opening is touched with phenol to destroy the epithelium. A light dressing of petroleum jelly gauze is then applied and covered with some dry gauze and wool. The patient requires to be in hospital for only 24- 36 hours after this treatment and can resume work almost immediately. The area discharges a little serous fluids for a few days or so before eventual healing occurs which takes three to six weeks.

4. Surgical procedures -

The treatment of pilonidal sinus is the excision of all the sinuses with ramifications in quiescent stage since these sinuses may have ramifications which may be left behind. It is a good practice to push the methylene blue through the sinuses. In case any ramification of sinus is cut through it will be obvious by staining of the tissue. An elliptical incision is made to include all openings. The incision is deepened upto the fascia covering the sacrum and coccyx. If any of the ramification has been cut, wider incision should be advised to include whole of the ramifications within the excised mass.

If there is any lateral sinus opening, after excision of the mass a sinus forceps is pushed down the lateral track and widened. Now this sinus has to be curetted and no hair should be left behind. 1 or 2 cm of sinus from external opening should be excised. If the pilonidal sinus was not infected; one can attempt primary suture of wound. A big bite should be taken from both the margins and needle should pass through the fascia covering the floor of wound. The end of sutures are tied over a role of gauze for continual pressure on wound.

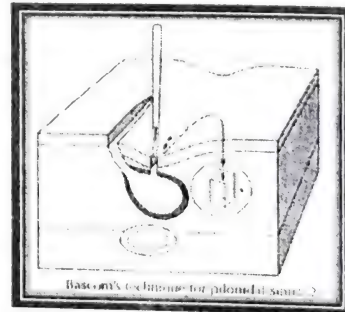
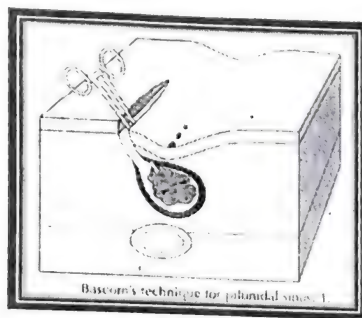
The problem with primary suture is recurrence. It is for this reason that the surgeon prefer to leave the wound wide open packed with gauze impregnated with petroleum jelly. The pack is removed after 5 days. Daily cleaning of and irrigation of wound should be done with path to be followed by dressing and after each dressing T-bandage is applied. Healing is expected in 3 - 4 weeks.

Pilonidal abscess -

This should be drained by excising an ellipse where the pits of sinuses might be. These pits will be surrounded by oedema and redness, after the wound has become free from infection by repeated cleansing, administration of systemic antibiotics and dressing, one should attempt proper excision of sinus and its ramifications.

Other operations -

- ★ 1. **Marsupialization**- In this technique the sinus track is excised, may not be to the whole extent upto the sacrococcygeal fascia. The edges of skin are now sutured to the margin of remanent membrane which forms the deep part of sinuses. Haemostasis is maintained and pressure bandage is applied.
2. **Bascom technique** - This procedure involves an incision lateral to the midline which allows the chronic abscess cavity to be scrubbed off for hair and granulation tissue. Removal of small midline pits is carried out with small 7 mm incisions.
The lateral wound/abscess is left open but the midline incision are closed.



3. Rhomboid Flap :

The patient is operated under general anesthesia, the patient is placed in a jack knife position, the natal cleft together with the two buttock areas are shaved and disinfected with povidone iodine solution, methylene blue is injected through the sinus opening or openings to mark all branches of the sinus. Wide rhomboid excision of the sinus bearing area, so that all sinus tracts are excised en block. Excision is carried out deep to the presacral fascia medially and to the gluteal muscles laterally, then a modified Limberg flap is prepared from either gluteal regions. The flap included the skin, subcutaneous tissue, and fascia of the gluteal muscle. Careful haemostasis using both electro cauterization and surface cauterization using the Argon Beam Coagulator is performed, suction drain is placed on the presacral fascia and the gluteal muscle of the donor side. Lateral suction drain is used in all cases, and subcutaneous tissue is approximated with polyglactin sutures in two layers.

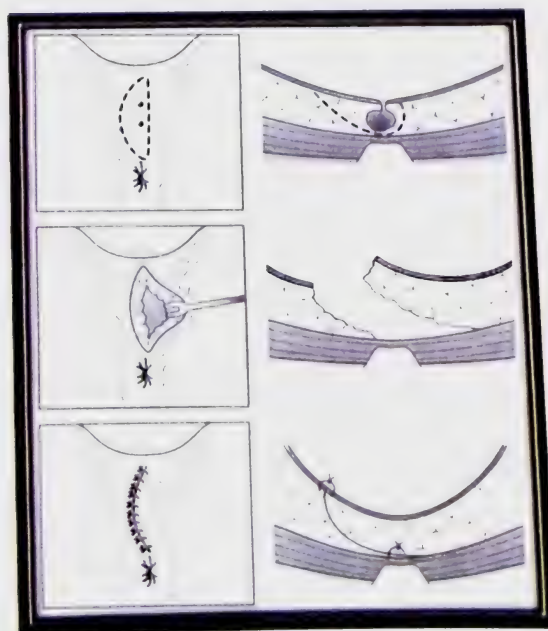
The skin is closed using either polypropylene sutures or skin staplers. The drains were

removed after drainage decreased under 15-20 ml/day, in an average period of 6 days (4-10 days). Half of the sutures or skin staples are removed on the twelfth postoperative day, the second half on the fourteenth postoperative day. All patients are followed up for a period ranging from 6 months to 3 years, the mean follow up time is 26 months.



4. Karydakis procedure

The karydakis procedure is one of the asymmetric flap techniques used in the treatment of sacrococcygeal pilonidal sinus disease. The procedure has been used since 1973 and Karydakis has reported the largest patients number, longest follow up period, and lowest recurrence rate (<1 percent) using this technique. The procedure consists of an asymmetrical elliptical excision, mobilization of the flap from the median side of the wound, fixation of the base of the flap to the sacrococcygeal fascia and suturing of its edges to the lateral one. A modification of the original karydakis technique has been applied at an Egyptian university hospital.



5. Complete excision of the sinus –

The actual incision is very simply performed, the difficulty arises in connection with the disposal of large wound. Excision is best carried out when the lesion is in quiescent phase. If there is an actual abscess present with the sinus of acute inflammation in the surrounding tissue, the correct procedure is to drain the abscess by a small incision. The actual excision can then be undertaken more satisfactorily two or three weeks later when the inflammation has subsided.

Excision is more conveniently carried out under a general anaesthesia. Some surgeons place the patient in prone position with the sacrococcygeal region elevated by pillows and angulations of the table. But lateral position is preferred with the buttocks projecting slightly beyond the edge of the table. The skin is prepared by painting with iodine or some other skin antiseptic to minimize the risk of contamination from this source during the operation. Towing is then applied, care being taken to clip the macintosh and towel covering the anal region and perineum to the skin immediately behind the anus as a further precaution against sepsis. Good lighting is done by mobile light source. The assistant stands on the opposite side of table and by firm traction with the fingers of both hands elevate the uppermost buttock thus rendering the internal skin tense and more suitable for excision. As an immediate preliminary to operation some surgeons inject methylene blue or other dye into sinus in order to stain all parts of track so that if it is inadvertently cut across any point they will be made immediately under this fact. This technique may perhaps allow this excision to be carried out closure to the lesion and in more selective manner.

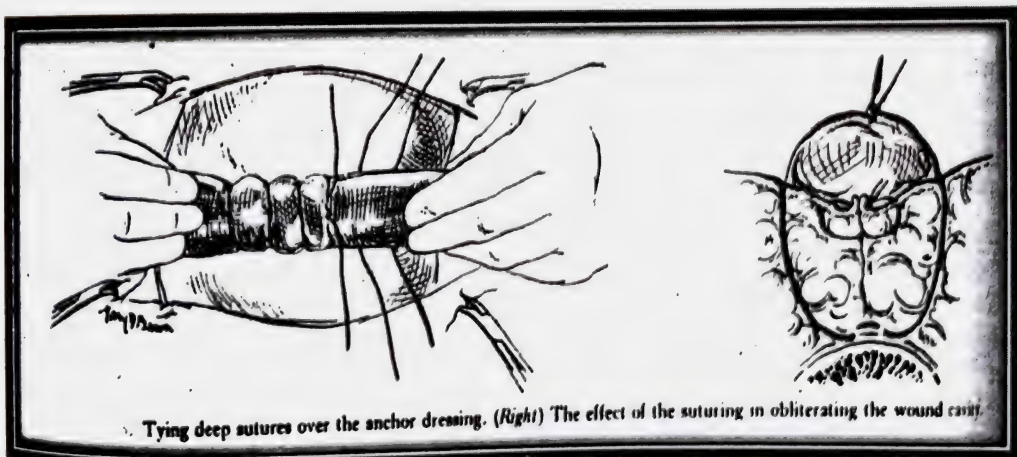
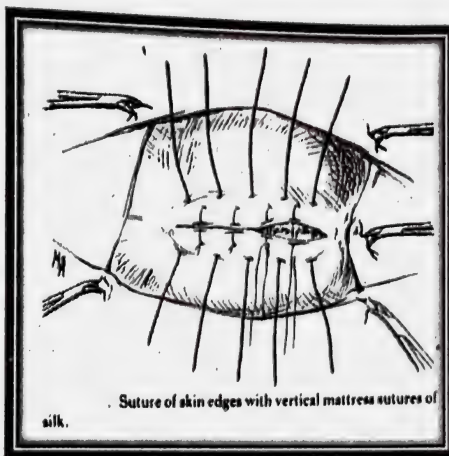
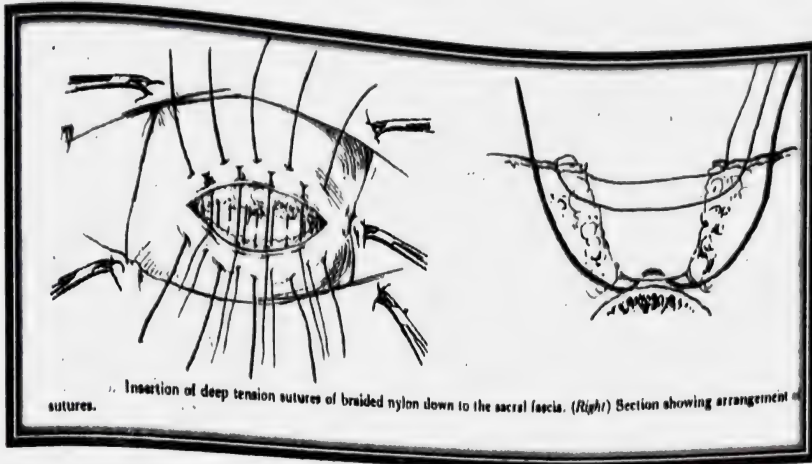
The incision is an elliptical one to include all sinus openings. If a secondary sinus lies unusually in lateral position the incision is extended to incorporate it, either as a special offshoot or as an enlargement of the whole ellipse. The incision is deepened at right angles to the skin through healthy fat to reach the fascia covering the coccyx and sacrum while traction is then applied to the isolate ellipse of skin and fat, it is separated from the fascia by scalpel or scissors. Dissection commencing at the anal end and proceeding cranialwards. In the process, numerous bleeding points are encountered close to the bone and are most easily dealt with the diathermy coagulation. True pilonidal sinus lies superficial to the coccyx and sacrum, so it is never necessary to remove any part of bone in order to excise them. Thus resulting wound is of considerable size and has steep shelving edges. It may be dealt with in several ways.

Primary suture –

After careful homeostasis with diathermy and hot pack a close series of deep sutures of strong braided silk or braided nylon is inserted on the large half circle or 5/8 Hagedorn needles. These are passed at interval of 2.5cm from one another and 2 cm from skin edge. Each stitch emerges in wound at the junction of fat with fascia and peritoneum on the back of coccyx and sacrum. It then takes a bite of this fascia roughly in the middle and passed in reverse direction from that to skin through the opposite side wall.

The ends of deep sutures are clipped with forceps and left untied while the actual skin edges and immediate subcutaneous fat are united by close series of vertical mattress suture of No.4 serum proof silk, tie as they are inserted. When the skin wound has been closed a thick roll of gauze is applied and the deeps sutures are tied firmly over it thus approximating the sides of

the wounds, not only to one another but also to the back of sacrum and coccyx. Further gauze and cotton wool are then placed over the anchored dressing and kept in position by several transverse strips of broad elastic, strapping extending from one buttock to the other. Care is taken to see that the strips nearest to the anus make contact with the post anal skin in midline and to help to seal off wound and dressing at this dangerous end. Finally T bandage is applied to reinforce the pressure of the strapping.



6. **Closure by plastic procedures -**

By lahey and cattell of boston - Relaxing tension on the sutures in the main elliptical wound by making a straight or angled relieving incision in the skin and fat on buttock. The secondary wound is then closed by an advancement type of suture.

Dour's and stars of Sydney - This consists of a rotational flap of skin and subcutaneous tissue from the buttock into the defect, care being taken to make the width of base of flap at least half the length of its free edge. The secondary defect in the buttock usually be closed by simple suture or a further small plastic procedure.

Pope and Hudson - They described a more complex method of closing pilonidal sinus wound by mobilization of gluteus maximum muscle to form sliding muscle graft.

Z-plasty/Eccentric - Elliptical excision with subsequent undercutting of the medial margins of the wound and its advancement across the midline have also been described. The multiplicity of the techniques however strongly suggests that these operations are neither simple to perform nor by and means invariably successful in their results.

Leaving wound open to granulate - Wound is simply packed open with gauze soaked in soft paraffin gauze or other dressing. The subsequent management is as for an ordinary fistula with opening bowels on the third day and thereafter patient should be advised to take morning and evening sitz bath followed by wound irrigation and dressing. The usual pilonidal wound treated by this method takes upto 8-10 weeks to heal completely and hospitalization is usual necessary for the first four weeks of this time.

Thiersch grafting of the open wound - This may be performed as a primary procedure carried out secondarily once granulation have filled the wound cavity. In primary grafting 1" sheets of skin are sutured in position.

The grafts are taken from medial aspect of thigh and applied as a sheet to the raw surface having been sutured to one another and to the skin edges to provide complete covering. They might have needed to be snicked with scissors in place to facilitate the escape of serous fluid and prevent their being float off. The results of primary graft are not good because it produces deep skin covered depression in the sacrococcygeal region. To overcome this objection the application of the grafts may be postponed till the wound has filled with granulations i.e. after 2-3 weeks. Unfortunately grafts take much less readily on granulation tissue than of fresh raw surfaces and the percentage of successful results or even partial thickness is very much lower than with primary grafting.

A practical difficulty with grafting at this stage is that by then the patient is mobile, is on normal diet and has become accustomed to the routine of a daily motion and twice daily bathing and dressing patient is therefore rather unwilling to accept strict bed rest, a reduced diet and the discomforts of constipation for five to six days in order that grafting may be carried out. His displeasure is much augmented if after all grafts fail to take.

शोफं न पक्वमिति पक्वमुपेक्षते यो योग गुणं प्रचुरपूयमसाधुकृतः ।
अभ्यन्तरं प्रविशति प्रविदार्य तस्य स्थानानि पूर्वविहितानि ततः स पूयः ।
तस्यातिमात्रगमनादगतिरित्यतश्च नाडीव यद्वति तेन मता तु नाडी ॥

शल्यजन्य नाडीव्रण -

नष्टं कथंचिदनुमार्गमुदीरितेशु स्थानेषु शल्यचिरेण गतिं करोति ।
सा फेनिलं मथितमच्छमसृग्विमिश्रमुष्णं स्त्रवेत सहसा सरुजा च नित्यम् ॥

फेनपूयानिलवहः शल्यवानूर्धनिर्वमी ।
भगन्दरोऽन्तरर्वहनस्तया कटयस्थिसंश्रितः ॥

(सु. नि. 10/14 विसर्प नाडी स्तनरोगनिदान)

(अ. ह.)

लक्षण नाडीव्रण -

तत्रानिलात्परुश सूक्ष्ममुखी सशूला फेनानुविधमधिकं स्त्रवति क्षपायाम् ।
तृटतापतोदसदनज्वरभेदहेतुः पीतं स्त्रवत्यधिकमुष्णमहः सु पितात् ॥
झेया कफाद्बहुद्यनार्जुनपिच्छिलास्त्रा रात्रिस्त्रुतिः स्तिमितरुक्कठिना सकण्डुः ।
दोषद्वयाभिहितलक्षणदर्शनेन ॥ तिस्त्रो गतीर्व्यतिकरप्रभवास्तु विद्यात् ॥

(सु. नि. 10/11-12)

कटुत्रिकं वचा हिंगुलवणान्यथ दीपकम् ।
पाययेच्चाम्लकौलत्थ सुरासौवीरकादिभिः ॥

(सु. चि. 8/38)

ज्योतिश्मती लांगलकी श्यामादन्तीत्रिवृत्तिलाः ।
कुष्ठं शताहवा गोलोमी तिल्वको गिरिकर्णिका ।
कासीसं कामजूनक्षीर्यो वर्गः शोधन इश्यते ॥

(सु. चि. 8/39)

क्षारसूत्र -

एषण्या गतिमन्विश्य क्षारसूत्रानुसारिणीम् ।
सूचीं निदध्यान्दत्यन्ते तथोन्म्याषु निर्हरेत् ।
त्रस्यान्तं समानीय गाढं बन्धं समाचरेत् ।
ततः क्षारबलं वीक्ष्य सूत्रमन्यत् प्रवेशयेत् ।
क्षाराक्तं मतिमान् वैद्यो यावन्नच्छिद्यते गतिः ।
भगन्दरेऽप्येश विधिः कार्यो वैद्येन जानता ॥

(सु. चि. 17/30-32.)

या द्विव्रणीयेऽभिहितास्तु वर्त्यस्ताः सर्वनाडीषु भिशग्विदध्यात् ।
घोण्टाफलत्वग्लवणानि लाक्षापूगीफलं चालवणं च पत्रम् ।
स्नुहार्कदुग्धेन तु कल्क एष वर्तीकृतो हन्त्यचिरेण नाडी ॥

(सु. चि. 17/34-35,)

आरग्वधनिशांकालाचूर्णं मधुघृतताप्तलुतम् । अग्रवर्तिप्रणिहितं व्रणानां शोधनं हितम् ।
योगोऽयं नाण्यप्याशु गतिमेघविमानिलः ॥

(सु. चि. 8/30)

स्नुहयक दुग्ध दार्वीभिवर्ति कृत्वा विचक्षणः । भगन्दरगतिं क्षात्वा पुरयेत्ता प्रयत्नतः ।
एषां सर्वशरीरस्थं नाडीं हन्यान् संशयं ॥

(चक्रदत्त 44/6)

जात्यर्कशम्पाकरंजदन्तीसिन्धूत्थसौवर्चलयावशूकैः
वर्तिः कृताहन्त्यचिरेणनाडीं स्नुक्क्षीरपिष्टासह चित्रकेण ॥

(भै. र. 50/11)

CHAPTER 10

KSHARA SOOTRA APPLICATION IN FISTULA IN ANO

Etymological derivation -

The term bhagandara has been formed by combination of two different words i.e. Bhaga + Darana. Bhag is a word derived from the root 'Bhaj' which includes perineum and 'Darana' i.e. destruction of the tissue.

Bhaga Pradesh includes perineal and perianal region. The Bhag, guda and vasti includes urogenital pelvic organs, rectum, anus and vicinity structure.

History -

Acharya Sushruta (1500 - 1000 BC) for the first time has explained in detail the causative factors, signs and symptoms, classification and management of bhagandara. Hippocrates made first reference to surgical therapy for fistulous disease by using apolinose (a plain thread) in cases of fistula in ano. English surgeon John Arderne (1307-1390 AD) wrote treatise of fistula in ano and afterwards Clysters in 1376 described fistulotomy and use of seton. Sainio and Helsink told male predominance in this disease. Great contribution was given by physician and surgeons such as Goodsall and Miles, Milligan and Morgan, Thompson and lockhart Mummery in late 19th and early 20th century by offering theories on pathogenesis and classification system for fistula in ano. In 1976 Parks refined the classification system which is still in widespread use.

Definition

- A swelling occurring within two fingers around the anus, which is deep rooted and accompanied with pain and fever is known as Bhagandara pidika. (Sushruta).
- A swelling in the anal region which has mild pain and subsides quickly is known as Pidika and it is different from Bhagandara pidika.
- Acharya Charaka describes it as a painful pidika occurring near anal orifice when contaminated and not cared, turns in Bhagandara.
- According to Acharya Vagbhatta Pidikia occurring in one or two fingers anal orifice due to deranged dosas and bursts either internal or external is known as Bhagandara.

Based on the cardinal features Bhagandara is correlated with fistula-in-ano.

Fistula in ano is a track lined by granulation tissue which opens deeply in the anal canal, rectum and superficially on the skin around the anus.

Bailey and Love

- Fistula implies a chronic granulating track communicating two epithelial lined surfaces. These surfaces may be cutaneous or mucosal.

John Goligher

- Fistula is an abnormal track leading from a mucous membrane to another mucous surface or to the skin.

Miller

Causes

Exciting causes -

- Non specific infection - Cryptoglandular origin- >90%
- Specific infection - Tuberculosis, actinomycosis, lymphogranuloma venerum.

Predisposing factor

Fissure-in-ano, an ulcer at the root of a pile mass, infected and inflamed condition of a crypt of morgagni, infection from a hair follicle or a sebaceous gland, an infected sweat gland the inflamed and / or thrombosed condition of pile mass, retained sutures after haemorrhoidectomy, sclerotherapy, foreign body

Specific causes

Malignancy -

- Inflammatory bowel disease, pilonidal sinus.
- Anal carcinoma, low rectal carcinoma, blood dyscrasia, post irradiation

Trauma

- Penetrating injuries, episiotomy, Surgery of prostate, instrumentation.

Pathogenesis of Fistula-In-Ano

- (i) Stage of Infection
- (ii) Stage of Burrowing
- (iii) Stage of Abscess formation
- (iv) Stage of formation of secondary opening

Because of infection there is vast collection of pus and any amount of large incision is unable to allow this big cavity to collapse effectively so that the healing can take place as it does in a case of superficial abscess.

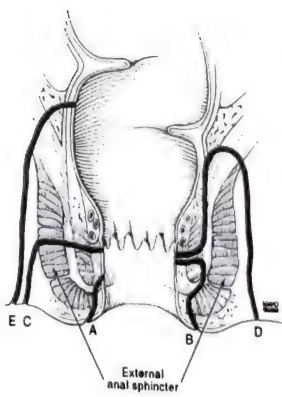
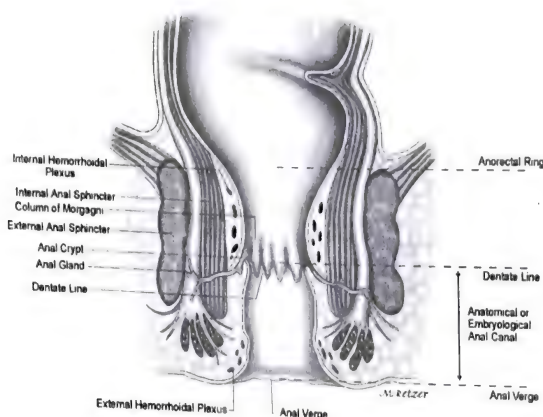
As the time passes during dressing after incision or after spontaneous bursting of the abscess, the cavity and the passage gradually get lined with fibrous tissue and chronic granulation tissue which then become responsible for non healing of these abscess resulting into constant flow of a purulent discharge through a narrow tubular passage. Each fistula-in-ano should have its origin in one of these para anal, para rectal or inter sphincteric abscesses from where the collected purulent discharge trickles down to form a sinus tract. The course of the sinus is usually decided by space infected and the structure overlying or underlying this space.

The internal opening is often the primary opening and denotes the source of infection from which the fistula initially developed. During the course of its development the primary opening may some times close and the purulent discharge flow out through the external opening only in which case it is termed as the blind external fistula. Similarly, a fistula can be blind internal also in which case the internal opening remains patent and the external opening is absent. This is difficult condition for diagnosis and for treatment since it is not easy to locate and approach the internal opening without an external opening. Still further, there may be a condition in which both the openings of a fistula are situated inside the ano rectal canal and the patient complains of a constant pus discharge through the anal orifice without any apparent localized abscess on the surface. Therefore, it is important to study all the possible permutations and combinations of a fistulous course which it may adopt in relation to the structures surrounding the ano rectal canal.

A case of sinus connected with a septic focus in the bones of that vicinity or in the spine or else in the small or large bowel. All these possibilities should be kept in mind while treating a case of fistula-in-ano.

Nesselrod holds the opinion that in majority of cases of fistula-in-ano and also in other ano-rectal disorders like piles or fissures etc. the primary source of infection lies in a traumatized crypt of Morgagni into which the infected faecal material can easily find an entry and can easily infect the underlying anal gland or glands to which this crypt is connected.

The number of ways in which the course of a fistula can be described depends upon its clinical presentation and the possible permutations and combination of the pathways adopted by a tract coming from a deeply seated abscess cavity. There are a number of factors which influence and decide the course of a tract.



- A. SUBCUTANEOUS FISTULA
- C. TRANS SPHINCTERIC
- E. EXTRA SPHINCTERIC

- B. INTRA SPHINCTERIC
- D. SUPRA SPHINCTERIC

Classification of Fistula-in-Ano

A number of authors have made significant contributions to the study of classification of Fistula-in-Ano. The modern concept of Fistula-in-Ano is based on anatomical

landmarks. Acharya Sushruta (1500-1000 BC) has given well documented clinical classification of Bhagandara.

'Milligan and Morgan's' (1934) classification is relative to the anal sphincters and in particular to the anorectal ring. Ernest mile classified fistulae according to the arrangement of lymphatic plexuses around rectum and anus. Some call the former one as the vertical disposition and the later one as the horizontal disposition.

Eisenhammer stressed the importance of the intersphincteric plane both in pathogenesis and spread of fistulae. Steltzner's (1959) classification is based on the anatomical course of the fistulous track in relation to the internal and external sphincter and the levator ani muscles. Park modified this classification in 1976.

Over the years, many classifications of Fistula-in-Ano have described. Some have been very simple but of no help in the treatment, while others have used terms which have different connotations to different surgeons. The aim of any such classification should be; to help the surgeon in the operative cure of the disease.

This knowledge acts as a guide to the operative treatment and it is very important to know it.

Comparison of Classification of Fistulae in Anal Region

Milligan Morgan's (1934) and Goligher (1975)	Park's (1976)
Subcutaneous (5%)	Scarcely recognized
Low anal (75%)	Low intersphincteric
High anal (8%)	Transsphincteric
Anorectal (7%) Ischiorectal or Infralelevator Pelvirectal or supralelevator	Transsphincteric with high blind infralelevator extension Trans or Suprasphincteric with blind supralelevator extension.
Submucous (or high intermuscular) (5%)	Extrasphincteric

Frequency of various anal fistulae

Reference	Type of fistula					
	Superficial (%)	Inter Sphincteric (%)	Trans Sphincteric (%)	Supra Sphincteric (%)	Extra Sphincteric (%)	Multiple and complete (%)
Parks et al	-	45	30	20	5	-
Marks and Ritchie	16	54	21	3	3	3
Arnous et al	-	61.1	19.1	5.5	-	14.2

CLASSIFICATION OF FISTULA IN ANO BY ACHARYA SUSHRUTA

Types of Fistula

- i. Shatponaka- fistula with multiple opening
- ii. Ustragreeva-curved fistula
- iii. Parisharvi- fistula with copious discharge
- iv. Shambookavart-circular fistula
- v. Unmargi- fistula formed due to trauma
- vi. Parikshepi-horse-shoe shaped fistula
- vii. Riju-Straight fistula
- viii. Arshobhagandar-fistula associated with piles

MILLIGAN-MORGAN IN 1936

(IN RELATION TO ANORECTAL RING)

SUBCUTANEOUS	5%
LOW ANAL	75%
HIGH ANAL	8%
ANORECTAL	7%
- INFRALEVATOR (ISCHIORECTAL)	
- SUPRALEVATOR (PELVIRECTAL)	
MUCOSAL	

Bailey & love divided fistulae in 2 groups according to whether their internal opening is below or above ano-rectal ring.

Low level fistulae- they open into anal canal below ano-rectal ring.

High level fistulae- they open into anal canal at or above the ano-rectal ring.

Subcutaneous fistula - Fistulous tract form under the skin of the anal margin or the epithelial lining of anal canal is termed as subcutaneous fistula.

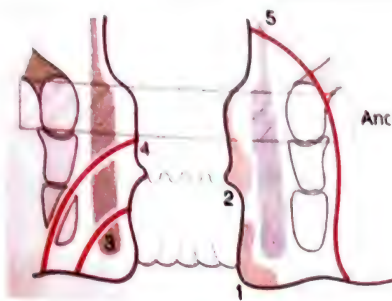
Sub mucous fistula - A tract traversing its course under the mucous lining of the rectum and going upward from the dentate line is called a submucous fistula.

Low anal fistula - Fistulae having a tract entering the anal canal at the level of inter sphincteric line are termed as low anal fistulae. An infection originating from the base of fissure-in-ano is commonest cause.

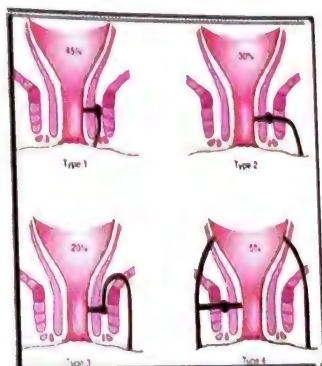
High anal fistula - Main fistulous tract enters the anal canal at dentate line or immediately below the anorectal ring and tract lies deeper to the superficial or deep portion of external sphincter.

It usually adopts a straight course if exists anteriorly, but in case it occupies the posterior quadrants, the tract is usually curved giving it the shape of semi horse shoe or horseshoe depending upon whether the tract is unilateral or bilateral.

Anorectal fistula -very rarer fistulae, with tracks that extend above the level of ano-rectal ring thus lie opposite both the anal canal and the lower part of the rectum. Fistula has either an external opening alone or, more usually, there is internal opening into the anal canal between the ano-rectal ring and anal orifice and commonly at pectinate line posteriorly.



Standard classification of fistula-in-ano

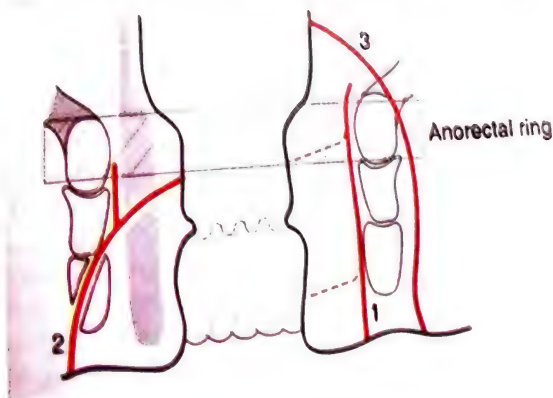


High level fistula

1. Inter-sphincteric 2. Trans-sphincteric 3. Supra-sphincteric 4 Supra-levator

Park's Classification (1976)

INTER SPHINCTERIC - 70%
 TRANS SPHINCTERIC - 25%
 SUPRA SPHINCTERIC - 5%
 EXTRA SPHINCTERIC - 1%



PARK'S CLASSIFICATION

Intersphincteric fistula – The fistula directly tracks down to the anal margin and open in perianal space. (Low sphincteric fistula).
 Rarely (high intersphincteric fistula) tracks upward and open into rectum or lead to intermittent rectal wall abscess.

Trans sphincteric fistula – The track traverses through the external sphincter to open in ischio rectal fossa from here it can open into perianal skin. Rarely it could form a T-type fistula with extension high in the ischio rectal fossa which could be felt as an induration the rectum on PR examination.

Supra Sphincteric fistula – This type of fistula as the track up to the pubo rectalis muscle and then down and pass above all the sphincters.

Extra sphincteric fistula – It traverses from the skin into fatty tissue of ischio rectal fossa than pierces the levator ani muscle to open into the rectum. The track lies outside all sphincters.

As it opens into rectum the high rectal pressure leads to mucus and faecal matter entering into the tract causing persistent fistula with recurrent infection.

Symptoms of fistula in ano

1. Discharge from an opening around the anus or per anum
2. Blood or pus mixed stool
3. Pain during defecation
4. Pruritus ani
5. Fever

Discharge – Persistent seropurulent discharge keeps the part always wet, irritate the skin and cause discomfort.

External Opening – Frequently solitary external opening usually situated 3.5 cm – 4 cm from the anus, presenting as a small elevation with granulation tissue pouting from the mouth of the opening

Pain – Pain so long as the opening is large enough for the pus to escape, pain is not the symptom, but if the orifice is occluded, pain increases until the discharge erupts.

Induration – As a rule there is much induration of the skin and sub-cutaneous tissue around the fistula.

Examination of patient – Before examining the patient, complete history should must be taken. The examination should be done in a comfortable position with maximum exposure of the perineum. Lithotomy is the best position to access a case of fistula in ano, though it is bit uncomfortable.

History of the disease with respect to its onset, mode and duration, type of discharge, severity of pain, chronicity of the disease, bowel habit, associated disease like tuberculosis, D.M., colitis, urinary disease, cardiac disease etc. should be taken.

Method of examination

General survey – Patients should be looked for anemia, general built and any other systemic diseases.

Systemic examination – Each system should be carefully examined before the patients was initiated into the treatment. Due importance was given to examine to the digestive for colitis, CVS for cardiac diseases, respiratory for tuberculosis, genito urinary for BPH.

Local examination – The examiner after wearing the gloves, should clean the part with antiseptic lotion and provide a gentle fomentation either with soaked cotton wool or with a steaming apparatus (Nadi sweda yantra) from a suitable distance.

a. The most important part of the examining a case of fistula in ano is inspection. The
b. examiner should observe the following points.
c. Discolouration
d. Swelling
e. Scar marks of previous surgery
f. Anal tags

External opening - Number, position, distance from anal margin
Pus discharge - Blood, pus, Faeces, Gas, Urine



Anterior External Openings



Multiple External Openings



Posterior External Openings

Palpation :-

- | | |
|----------------------|---------------|
| a. Temperature | b. Tenderness |
| c. Wall of the Sinus | d. Mobility |
| e. Induration | f. Lump |

Digital Examination :-

With in the lumen

Growth

Obstruction

In the wall

Ulcer

Internal opening

Polyps

Stricture of the Rectum

Carcinoma Rectum

Outside the wall

Anteriorly

Prostate

Seminal vesicle

Base of the bladder

Rectovesical pouch

Uterus

Cervix

Vagina

Laterally

Ischio rectal fossa

Lateral wall of pelvis

Lower end of ureter

Internal iliac arteries

Posteriorly

Hollow of sacrum

Sacro coccygeal teratoma & coccyx

Inspection of examining finger for – Faeces, Blood, Pus, Mucous

Examination with probe

Location of fistula

Towards Rectum

Towards Ischial Tuberosity

Character of Fistula

i. Blind external

ii. Blind Internal

iii. Complete

iv. In-complete

v. Bilateral

vi. Radial

vii. Curved

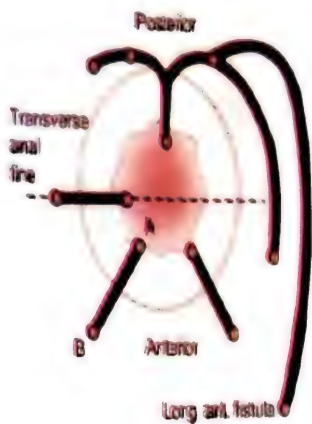
viii. Straight

Identification of Internal Opening

(i) Goodsall's rule is very important to assess the internal opening. It is explained as follows: Draw an imaginary transverse line through the central portion of the anus. An external opening anterior to this line indicates that tracks run directly to the internal opening in the same quadrant of anal canal. An external opening posterior to this line indicates that the track runs in a curved course to internal opening in posterior midline. An exception to this rule is an external opening situated beyond a radius of 3.5 cms from the anus in anterior to the imaginary line. In this case track usually curved and internal opening is situated posteriorly in the midline.

(ii) A cord like thing may be palpable on digital examination beneath the skin between

secondary opening and anal wall.
 (iii) Pressure applied on perianal tissues around the track with the proctoscope in situ, a drop of pus may appear at internal opening.
 (iv) A flexible probe may be used through external opening to detect the internal opening.



GOODSALL'S RULE

Investigations: The investigations should be aimed so as to fulfill the following objectives.

1. To assess the general condition of the patient and to diagnose the associated systemic diseases.
2. To find out the extent of fistula and possibly the causes of recurrences.

The following investigations are required

Blood examination: Hb, TLC, DLC, ESR, FBS, B.Urea, S. Creatinine, B.T, C.T
 Radiological examination, CXR-PA, Plain X-Ray (K.U.B), X-Ray - Spine,
 Pelvis, Fistulography
 CT Scan, MRI

Other examinations

Montoux test, Biopsy, Pus Culture sensitivity test



Passing a probe into a low anal fistula and palpation of the point of probe in the anal canal.

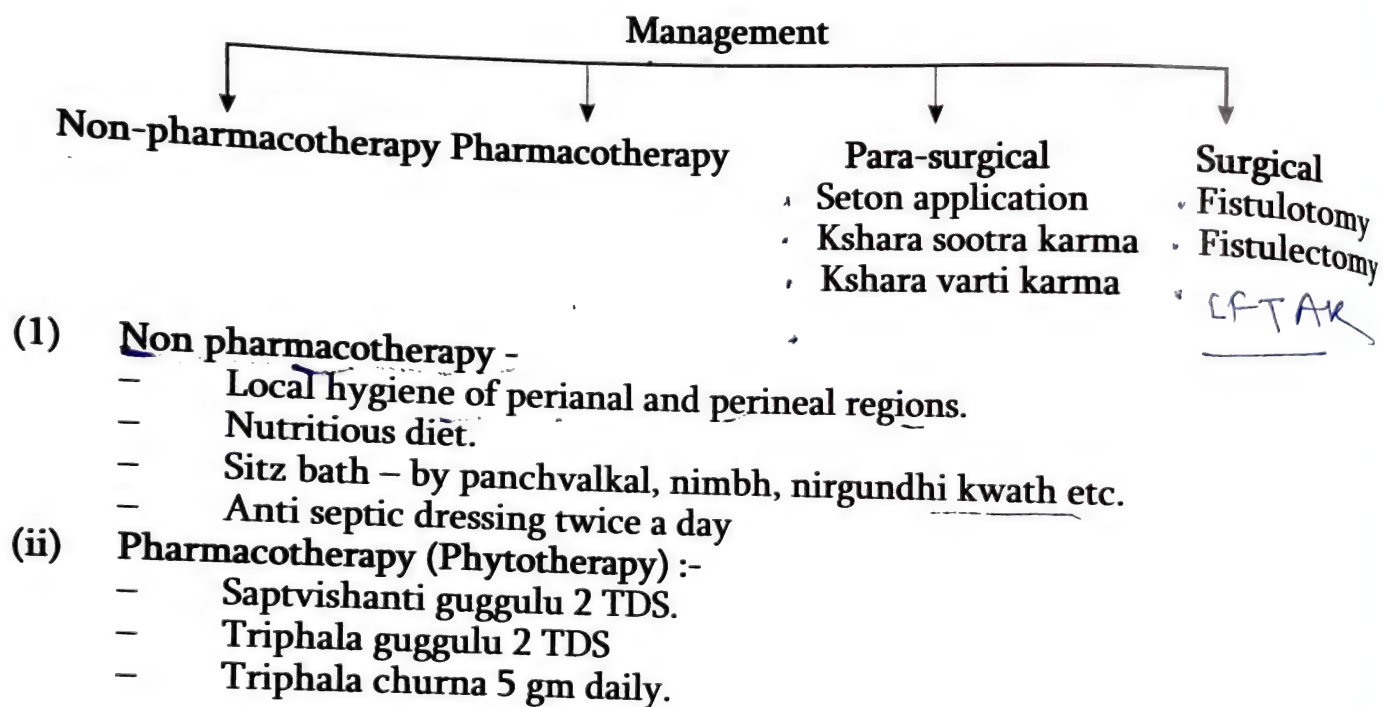


Passing a probe into a ano- rectal fistula and palpation of the point of probe through the rectal wall above the ano-rectal ring.

Treatment:

Principles of Management of Fistula-in-Ano

Management of Fistula-in-Ano is of 3 types



Parasurgical

Seton division

It was described by Hippocrates in the 5th century B.C. His concepts are still applicable today for the management of difficult fistula problems. Seton (from the latin seta, a bristle) is a very slender thread of raw lint and uniting it into five folds of the length of a span and wrapping them round with a horse hair. It is certainly the simplest of the methods available for the treatment of extrasphincteric fistula and probably produces results comparable to the more suitable approach, at least with respect to cure rates.

When a track crosses the sphincter at a high level, it is much safer not to divide all the

muscle beneath the track. Only a portion of the muscle is cut and a Seton is inserted. Seton materials vary from a non-absorbable silk to nylon, which are commonly used. Some surgeons prefer to use stainless steel wire and twist it at intervals, thereby cutting through the muscle. Park and Stitz (1976) have advocated the seton. It is left in situ for 6-8 weeks, but may be left in place for several months; if there is infection it can be removed without division of the contained muscle. Henley recommended on elastic seton, tightened at two or three weeks interval until it transits the muscles. This slow division on scarring ensures preservation of sphincter function.

Advantages of Seton

- It provides way to internal opening and fistulous tract for a staged operation.
- It allows the surgeon to better delineate the amount of muscle beneath the fistulous track.
- It prevents accumulation of pus in the track and allows for proper drainage.
- It is used to divide the sphincter gradually.
- It is specially indicated in anteriorly situated fistulae with no puborectalis muscle (Henley 1978).
- When a seton is in place, the assessment of the relationship between the internal opening and puborectalis muscle is easy.
- Gabriel (1963) postulated that presence of a foreign body stimulates the inflammatory reaction producing more fibrosis to prevent retraction of sphincter after division.
- It is especially helpful in dealing with high level fistulae, transsphincteric and suprasphincteric Fistula-in-Ano.
- After seeing the adverse effects with the application of irritant chemicals, severe postoperative complications following the surgery over fistulous tracks, compelled the surgeons to discard the choice of operative management for Fistula-in-ano. So, kshara sootra treatment became popular all over the world.

Kshara sootra karma

Indication

- Chronic Non specific fistulae

Contraindication

a) Definite contraindications :

- Osteomyelitis of pelvic bones
- Osteomyelitis of femur
- Tuberculosis of hip joint
- Tuberculosis of spine
- Intra-abdominal cold abscess
- Chronic/acute cold abscess
- Regional ileitis
- Pelvic abscess
- Intestinal and pelvic malignancies
- Venereal disease

- Strictures of urethra causing urethral sinuses
- Crohn's disease

b) Associated conditions-

These are the fistulae where Kshara sootra can be applied but the treatment for the systemic conditions should also be instituted. These are :

- Tuberculosis
- Diabetes Mellitus
- Hypertension
- Ischaemic Heart Disease
- Neuropathic conditions e.g. paraplegia etc.
- Chronic amoebiasis
- Benign Prostatic Hypertrophy
- Anaemia
- Uraemia and C.RF
- Urinary Tract Infections.

Procedure

Purva karma

- Written and informed consent of patient and attendants is taken.
- The patient is given proctoclysis enema/ peglac solution before the procedure for evacuating the rectum of faecal matter.
- The patient's perianal area is shaved off for hairs.
- A mild anxiolytic drug is given before the procedure.
- Tetanus prophylaxis is given in the form of tetanus toxoid 0.5 ml i.m stat.
- Xylocaine sensitivity is done with a test dose

Pradhana karma -

The patient is made to lie in lithotomy position and thighs are made to relax.

The whole perianal area is painted with antiseptic solution and draped with sterile sheets.

Step 1 -Nadi swedan karma : The part is again quickly examined and a gentle soothing steam fomentation by a nadi swedana yantra is indicated for 3-5 minutes. This will not only clean the part but also relax the sphincteric tone which will facilitate the application of kshara sootra. Digital anal dilatation is done to stretch the anal sphincters.

Step 2 - Identification of primary (internal) opening : The surgeon should lubricate his index of the same side. An attempt is made to palpated the internal opening which is often marked by a small protrusion or by a dimple at dentate line. The primary opening can also be visualized by anal speculum which is more evident by the manipulation of the fistulous tract leading to exuding pus from the primary opening or H₂O₂, I₂ or methylene blue dye irrigation is done through external opening to locate primary opening.

Step 3 - Curetting of tract : Tract is curetted and tissue is sent for biopsy and culture.

Step 4 Probing : There are two methods of probing

- i. Retrograde
- ii. Anti grade

Retrograde : In this method a fine malleable curved probe is passed through internal opening and brought out through external opening. Probe with bearing a handle on one end can facilitate the process.

Antegrade : A fine malleable probe is then passed through the external opening towards the anal canal and then gaining entry through the internal opening. When the probe has passed through the internal opening, it is brought out through the anal canal and entire course of fistulous tract is explored.

A sharp bend of fistulous tract which is felt as a thick layer of tissue intervening between the finger and probe could not be adopted by metallic probe. For this a silver/ lead wires or plain rubber catheter or 3 -4 size can also serve the purpose usefully. Because it can never pierce the rectal wall by creating a false track.

A retrograde probing from the internal opening can also help in guiding the external probe.

If primary opening is really closed and the fistula is blind external, one should create a new internal opening on most prominent point in rectum. But in no case it should go above the dentate line and never above ARR even if the fistulous cavity is felt at higher level.

In case of supralelevator abscess and pelvi rectal type of fistulae, the track is always above the dentate line. But the primary source of infection in all these cases lies in a crypt anal gland at ano rectal junction.

Therefore it is not advisable to go above the dentate line. The left over part of cavity/ tract above this level will drain by gravity with the presence of the thread and it will show spontaneous healing in due course of time.

The entire fistulous tract is used as a fulcrum, the tip of the probe is pulled downwards and the handle is pushed upwards, till the tip of the probe protrudes out.

Step 5 - Application of apolinose (a plain thread) : Then eye of the probe is threaded with a plain thread and gently withdrawn so that entire tract of fistula is threaded by sootra.

Step 6 - Ligation of apolinose - The two ends of thread are now snugly tied outside ano rectal canal. The knot tying somewhere on the surface between the fistulous opening and anal orifice.

Step 7 - Change of apolinose by Kshara sootra : Apolinose is replaced by kshara sootra on the next day. Kshara coating must be stripped from the place which is involved in the knot. Kshara coating on the surface have no role to play except for producing some undesirable irritation. So it is better to denude the external part of thread for sufficient length. In initial few sittings, the loop should either be loose fitting or just fitting.

Change of Kshara sootra

It is done once in a week better on 7th day

Kshara sootra is tied lateral or outer side of the older thread near previous Knot.

On the other side of Knot, thread is hold with artery forceps and older thread is cut in between the Knot and artery forceps.

It is changed by withdrawing older thread outside the anus after cutting older thread kshara sootra is tied in the tract snugly.

The tie of the Kshara Sootra should not be tight or loose but just approximated because tightly tied thread gives pain to the patient and loose tied thread don't enhance the cutting & debridement properly.

- These procedure generally do not require local or general anaesthesia.
- Kshara Sootra is changed till the whole tract is excised & debrided with healing from lateral or both sides. The thread comes out itself when whole tract cut & heals.

Key points

- In previously operated cases fibrous tissue containing tract and scar tissue require tight tie.
- When granulation tissue appears on the surface of wound, presence of cavity inside is suspected and in such case kshara sootra is tied loose and kshar pitchu or varti, is applied in the cavity.

Measurement of old thread - Length of changed old thread is measured at each sitting for plotting on the proforma in the form of graph. For this FOLDER FORMULA should be used.

F- denotes -

- Type of fistula i.e. L.A., A.R.
- Type of bhagandara i.e. S.P., U.G., P.S.

O denotes -

- Number of openings i.e. I, II, III
- Clock position of opening

L denotes -

Length of the thread obtained at the first change of kshara sootra

D- denotes -

Duration of the disease in year.

E denotes -

- Earlier operation, if any.
- Efficacy of kshara sootra treatment in terms of unit cutting time.

R - denotes -

Recurrence of the disease after kshara sootra treatment as recorded during follow up period.

		TREATMENT BY APPLICATION OF KSHARA - SUTRA	
		No. of Sittings	Date of R.S. Application
FOLLOW - UP	Date		
	Condition of Thread		
	Pain		
	Discharge		
	Prognosis		

Proforma for recording

Paschata karma –

- i. **Anuvasana vasti** (medicated oil enema)- 3-5 ml of soothing oily preparation as anu taila, jatyadi taila etc is injected high into anal canal before defecation. This should be done twice daily.
- ii. **Usnodaka avgahana** (sitz bath) – Patient is advised to undertake hot water sitz bath twice daily for half an hour before defecation.
- iii. **Application of ghrita** – Application of medicated ghrita prepared with Jasmine gauriculatum (jati). It is applied over the wound and rectum after sitz bath and cleaning the wound. Ropana shanshanka is the ghrita preparation with honey and madhuyasthi, the medicated ghrita has great efficacy in antibiotic resistant septic wound of chronic nature.
- iv. **T bandage** – After application of ghrita T-bandage should be applied.

Supportive treatment –

- Laxative** – as abhyarista or kalpasava four tea spoon full with equal amount of water after meal.
- Purgative** – if laxative fails to give desire effects then purgatives are used as Panchsakara churna, Satasakara churna 3-6 gm with luke warm water at bed time.
- Anti inflammatory treatment** – as Shigru guggulu 4 vati. Saptavinshati guggulu, Shodashanga guggulu, Trayodashanga guggulu, Kaishor guggulu, Rasanjanavati (2 tid).
- For healing** – Ravi tandava rasa (R.S.S.) with Prawal bhasma in 0.5 gm quantity in 2 – 3 doses with honey.
- Analgesic drugs** – Irrigation of the part with warm Anu taila relive the pain. Godanti and Pravala in combination with Sanjivani popularly known as Godanti vati can be used.
- Anti biotic** – Suitable antibiotic as per need and culture and antibiogram.
- Vihara** – Patients are to advised to avoid exercise intercourse, anger, obstruction of natural urges, riding etc. for 1 year.

Follow up

The patient is advised to visit the surgeon weekly to asses the condition of the fistula.

Unit Cutting Time

It is an important parameter to assess the efficacy of the kshara sootra. In kshara sootra therapy cutting and healing go simultaneously. so whenever healing is delayed, cutting is also suspended by keeping thread loose. so whenever cutting time is considered it always mean cutting and healing. The term “UNIT CUTTING TIME” or UCT represent the number of days required to cut 1 cm. This is calculated by dividing the total number of days taken by a fistula to heal by initial length of tract.

$$UCT = \text{total number of days} / \text{initial length of the thread in cm.}$$



Local Anaesthesia



Probe being passed



Probe coming out of the internal opening



Passing of the ksharasootra



Ksharasootra ligated around the tract



Dressing after the procedure is complete

Surgical management :- The only form of treatment of an anal fistula that has an reliable prospect of cure is operation. Presence of a symptomatic Fistula-in-Ano is an indication for operation, spontaneous healing of Fistula-in-Ano is very rare. Neglected fistulae may result in repeated abscesses and persistent drainage. Very rarely, malignancy may occur on long standing fistula. Therefore, operation should be recommended unless there are specific medical contraindications to anaesthesia.

(i) **Fistulotomy** - It includes incision of the track laying open followed by the curettage of underlying tissue. Recurrence occurs due to remnants of abscess cavity, necrotic or fibrous

tissue.
(ii)
tissue.

1. **Fistulectomy** - It involves the total excision of the track with surrounded unhealthy tissue. It causes very wide wound and it heals from top causing a tunnel and recurrence.
2. **Goligher** has described 5 main types of operations for **Fistula-in-Ano**.
3. Laying open the fistula and allowing the wound to heal by granulation.
4. Laying open the fistula followed by immediate skin grafting.
5. Conservative operation based on the acceptance of anal glandular infection as the prime cause of **Fistula-in-Ano**.
6. Destruction of fistula track by CO_2 laser beam.
7. All the operative technique, however can be grouped under two broad categories namely, **Fistulotomy and Fistulectomy**

SURGICAL TREATMENT DESCRIBED BY ACHARYA SUSHRUTA

S.N.	Name of disease	Signs and symptoms	Management
1.	Shatponak	<p>Multiple boil or ulcerations with opening wound and anal tear.</p> <p>Foul smell of faeces and urine according to discharge</p> <p>Aasarva clear mixed with flatus, excessive discharge, complicated wound discharges faeces, urine and semen</p> <p>Vedana or pain like beating,</p> <p>Wounds and surrounding tissues looks like red blackish in colour</p>	<p>Operative procedures advised according to need. Incisions like ardha langalak or langalak or sarbatovadarka given</p> <p>Gothirthak incision followed by cutting and pricking agni or kshara karma (cauterisation) advised.</p> <p>Conservative treatment to increase pachkagni. Swedan with medicated vapours. Local applications of medicated oil of mulehathi and other medicines</p>
2.	Ustragreeva	<p>Small everted boil like camel's neck</p> <p>Foul smell</p> <p>Warm foul discharge when complicated discharges flatus, faeces, urine and semen</p> <p>Burning like kshara and agni</p>	<p>Adequate debriement with kshara after excision of tract. (chitwa)</p> <p>Cauterization with kshara (agnikarma is contra indicated)</p> <p>Washing with medicated water (parisheka)</p> <p>Medicated oil and ghee for healing and relief of pain.</p>

S.N.	Name of disease	Signs and symptoms	Management
3.	Parisravi	<p>Reddish Whitish, hard, fixed, inflamed boil like aakriti</p> <p>No foul smell</p> <p>Thick gummy whitish discharges when complicated flatus, faeces, urine and semen comes out from the wound</p> <p>Itching, heaviness and other pains of shleshma derangement</p> <p>Whitish or pale varna</p>	<p>Laxatives and purgatives Operative procedures excision of tract with incisions like kharjurpatraka, chandrardh, chandrachakara, suchimukha, awangmukha, which ever suits follow by cauterization with kshara or agni karma in post operative period to avoid recurrence.</p> <p>Washing with medicated water (parisheka)</p> <p>Warm medicated oil and ghee locally</p> <p>Laxative, purgatives and to increase panchakagni laghu aahar is advised.</p> <p>Children are not advised above treatment</p>
4.	Shambukawarta	<p>Like toe opening multiple boils</p> <p>Mixed smell of all the doshas</p> <p>Multiple coloured pus discharge</p> <p>Burning, itching and cutting vedana</p> <p>Multi coloured boil</p>	<p>Conservative treatment with warm medi- -cated oil, ghee and laxative etc. based on prominence of dosha.</p>
5.	Aagantuka	<p>No external appearance</p> <p>Putrified smell of blood and muscle, Pus full of debris and necrotic tissues, pain like vidradhi or abscess, Reddish swelling inside rectum or anus</p>	<p>Operation for extraction of bone and cauterization or agnikarma with black stone (jambhawostha)</p>

Recent advancement in case of fistula in ano

1. Fibrin glue-

Glues :-

- Occlusion of fistula tract with sealant and halts contamination of tract with stool, mucous blood & pus.
- Protein in sealant stimulates native tissue ingrowth and biological scaffolding.

Technical aspects

- Fibrinogen + thrombi are the two components.
- 1st component is solution of fibrinogen, factor XIII and bovine apoproteins
- 2nd component - thrombin + calcium (cofactor)
- Both components are in separate syringe
- Dual syringe applicator - deliver both to surgical site (mixed at tip of applicator)

- Clot begins to organize within second of mixture

Mode of action :- Stimulates the growth of fibroblasts and pluripotent endothelial cells into the fistula tract to seal it off.

- Using the fibronectin and collagen present in the mixture as a matrix for the cells to integrate into these cells then lay collagen and extracellular matrix in the next stage of wound healing.

Injection technique

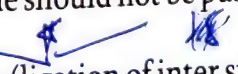
- A well lubricated ureteric catheter size 6 or 7 F (French unit) passed through the fistula tract and delivered outside the anal canal.
- Stylet is taken out and the KTP laser fiber passed through the ureteric catheter which was then removed and the laser fiber withdrawn to just inside the anorectal mucosa and a wooden spatula is placed over the inner opening.
- The laser was set at 20 watts continuously and a steady pull of the fiber towards external opening is carried out for 20-30 seconds.
- Internal opening is closed with 2/0 vicryl suture under direct supervision.
- Fibrin glue injected through ext. opening and its inner opening is pressed by the index finger.

Advantages

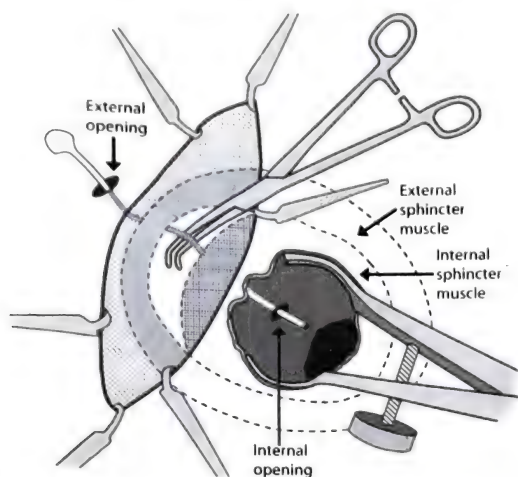
- Simple procedure
- Non-invasive
- Minimal pain
- Early recovery
- Less morbidity
- Can be used again after a failure
- No risk of incontinence
- Success rates 31-80%
- Excellent in long, complex fistulas

Disadvantages

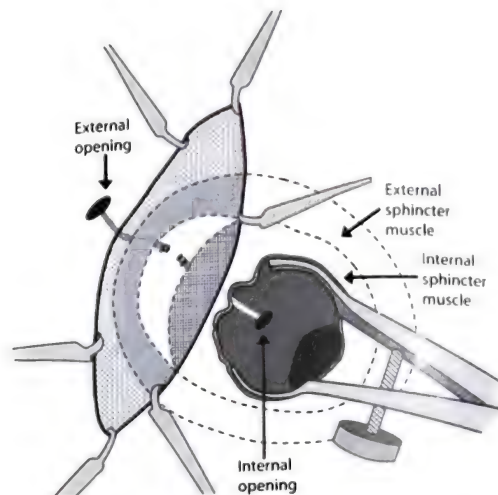
- Recurrences increase with time
- Inability to close internal opening securely
- Ineffective in: Short, wide tracts, Recto-vaginal fistulas
- High cost
- Glue should not be pushed out of fistula tract.

• **LIFTAK** 
LIFT Technique (ligation of inter sphincteric fistula tract): It is a novel modified approach through the intersphincteric plane for the treatment of fistula-in-ano, known as LIFT (ligation of inter sphincteric fistula tract) procedure. LIFT procedure is based on secure

closure of the internal opening and removal of infected cryptoglandular tissue through the intersphincteric approach. Essential steps of the procedure include, incision at the intersphincteric groove, identification of the intersphincteric tract, ligation of intersphincteric tract close to the internal opening and removal of intersphincteric tract, scraping out all granulation tissue in the rest of the fistulous tract, and suturing of the defect at the external sphincter muscle



Dissection in the intersphincteric space



Fistula tract is ligated & divided

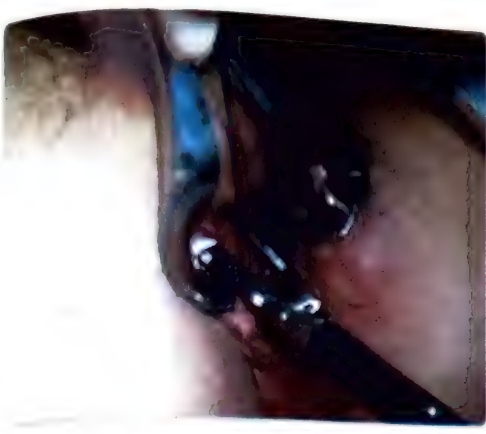
Radiofrequency Ablation of Fistula

- Fistulotomies using radiofrequency ablation.
- Low fistula should be treated.
- When RFA compared with conventional recurrences are similar.
- Incontinence to gas 4% vs 12%
- RFA does not heal surrounding tissue.

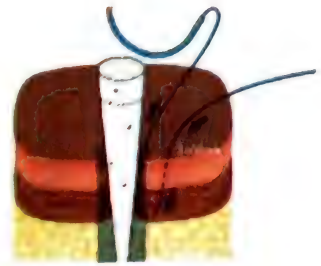
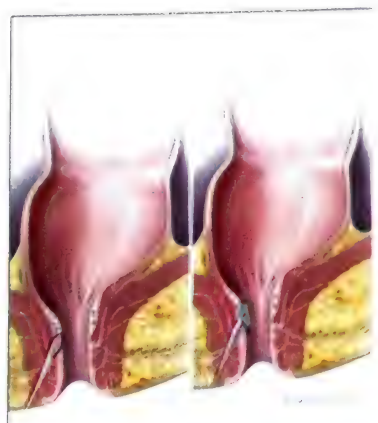
VAAFT TECHNIQUE (video assisted anal fistula treatment):- This technique involves use of an endoscope, i.e. Fistuloscope and involves two stages. First the scope is introduced through external opening and internal opening is identified. This is the Diagnostic step. Then a suture [purse string] is taken around the internal opening so as to close it snugly. A semicircular stapler or linear stapler can be used also. Then the fistula tract is debrided with fistula brush and scrapings sent for HPE. A fibrin glue injected near the inner end [now closed] and coagulation of the whole wall is done with the electrode. Simultaneously, the scope is withdrawn and the therapeutic procedure is over.

- 3mm Fistuloscope inserted through external opening.
- Track is dilated with pressurized glycine solution.
- With gradual left to right, up or down movements follow the track.
- Identify & reach the internal opening.
- The whole track is coagulated with monopolar cautery cm by cm.
- Fistula pathway appears as charred filled with dark necrotic material.
- Necrotic material is removed under vision with fistula brush.

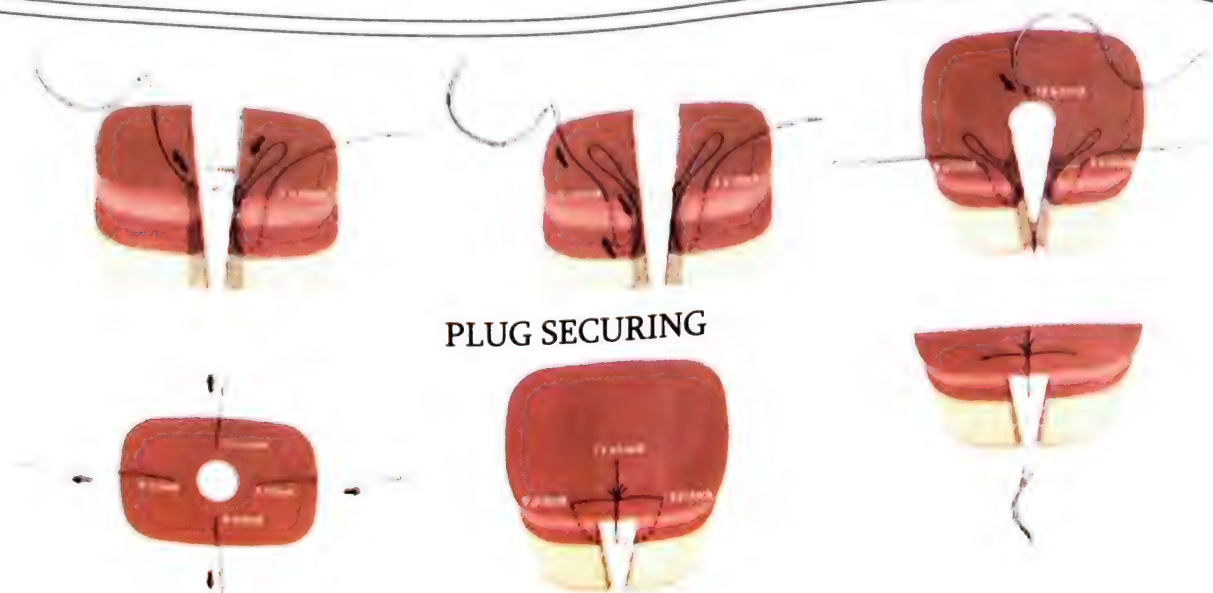
- Few sutures applied to close the internal opening.
- Lift the internal opening with the help of sutures like volcano/tent.
- A contour stapler or liner stapler is applied and the base of volcano which completes mechanical cutting and suturing.
- Final results is small scar at the site of internal opening.



Anal fistula plug - Anal Fistula Plug is made up of sub mucosa of small intestine and is a highly sophisticated absorbable material which is absorbed/dissolved by the body in 6-8 weeks. This plug is placed and anchored in the fistula tract by a special technique and the internal opening is closed over it. It provides the scaffold over which body's collagen gets deposited and closes the fistula.



PLUG INSERTION



PLUG SECURING

PLUG SECURED

EXTRA LENGTH TRIMMED

Advantages :-

Non-invasive- The procedure involves no cutting, scarring or distortion of anatomy at all.

Little pain- The procedure is associated with comparatively little pain as there is no cutting involved.

Early recovery- Recovery is very fast and the patient can be back to work within a short span.

Less morbidity- There is no new wound formation and no extensive post operative dressings are required.

Short Hospitalization- The patient can usually be discharged in 12-24 hours after the procedure.

Can be used again after a failure- In case of a failure, the procedure can be repeated without any risk or drawback.

No Risk of Incontinence- There is absolutely no risk of incontinence even in high fistulas and complex fistulas. Somebody has remarked "For high Fistula, AFP method is a boon sent directly from heaven".

'Biological' closure- This procedure is a biological closure of the fistula tract rather than 'Mechanical' closure as in advancement flap.

Minimal foreign body reaction- Studies have shown that there is minimal foreign body reaction to the plug material.

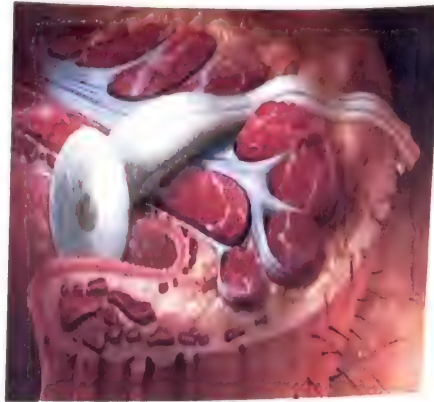
Resistant to infection- The plug is made up of special material which is resistant to infection. This factor helps as the plug has to be placed in an infected environment.

High Success rate - Studies have shown the success rate of Anal Fistula Plug treatment to be in the range of 70-87%.

PROCEDURE OF CHOICE- The Anal Fistula Plug is the treatment of choice in

1. High Fistula
2. Long, complex fistulas
3. Recurrent fistulas

4. Horse-shoe fistulas,
5. Anterior radial fistulas
6. Crohn's disease.
7. Rectovaginal fistulas(Long term results awaited)
8. Low fistula when patient doesn't want pain, long hospitalization, delayed rec and scarring.



CONICAL SHAPE WITH RETAINED BUTTON

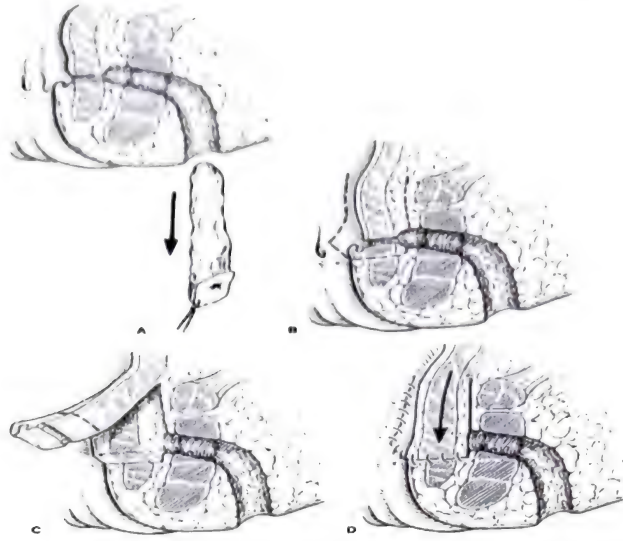
Disadvantages/Complication :-

1. Higher Cost- The cost of the plug is on slightly higher side which becomes deterrent for a few.
2. Chances of Failure - Though Anal Fistula Plug has high success rate, still it is not successful in some patients. But even in these patient (with recurrence) , this procedure can be repeated without any harm/risk.
3. Plug Extrusion- The plug can be extruded in 10-20% of cases.
4. Abscess formation- There can be abscess formation in 4-8%.

Mucosal Advancement Flap-

It is a treatment of choice in post obstetric and crypto-glandular recto-vaginal fistula. In prone jack knife position, fistulous track is first identify by probing. Then intra anal retractor is inserted. Mucosa surrounding the fistula ,anterior aspect of anal canal in submucosal and intersphincteric plane is infiltrated with weak adrenaline solution. Internal sphincter is divided after giving a transverse incision at or below the level of fistula. Now dissection is proceed in intersphincteric plane for 4-5 cms.

Lateral incision is given along the long axis of the anus on either side of fistula opening. Thus a flap containing mucosa, submucosa, and intersphincteric plane with a wide base and tapering apex having fistula is created. Fistula is then excised transversely in the lower part of flap .Any infection if present in intersphincteric plane is curetted. Mucosa and internal sphincter below the transverse incision , are dissected free. Direct anastomosis is made between apex of flap and cut anal canal and lateral margins are secured with interrupted suture. In this method vaginal side of fistula is completely ignored unless there is sepsis, in which case local curettage and excision is done.



- A: The fistula track is excised from the external opening to the intersphincteric plane.
 B: The flap incorporating the internal opening is raised along with full-thickness internal sphincter.
 C: The raised flap, with line marking the level of division to excise the internal opening.
 D: The advancement flap is sutured to a site distal to the excised internal opening.

Transvaginal Mucosal Advancement :-

Technique is more or less same as rectal mucosal advancement method. But it is quite troublesome because of far less lax tissue in vagina than anus. But in some case as after restorative proctocolectomy or previous colo-anal anastomosis, there is so much scarring in anal canal so anal advancement is almost impossible and in these cases transvaginal advancement is more convenient.

Transsphincteric Mucosal Advancement :-

If an internal opening of rectal component of recto-vaginal fistula is not approachable, access may be obtained using trans-sphincteric approach or by posterior rectotomy without division of sphincter in which later is preferred.

With patient in prone-jack knife position, a longitudinal incision is made slightly off the midline from the buttock down towards the anal margin. Upper part of incision is deepened, and lower part of coccyx is excised if necessary. Rectum is opened between stay suture and a rectal mucosal advancement flap is created in previous manner and the defect is closed, the ano-rectotomy is then closed in layers. Closed suction drainage is advisable.

अपक्वाः पिडका पक्वास्तु भगन्दराः ।।

(सु. नि. 4/4)

क्रिम्यस्थिपसूक्ष्मक्षणत्यवाय प्रवाहणान्युत्कटाश्चपृष्ठैः ।

गुदस्य पार्श्वे पिडका भृशति पक्वप्रभिन्नतु भगन्दरः स्यात् ।

(च. चि. 12/96)

एषण्या गतिमन्विष्य क्षारसूत्रनुसारिणीम् ।

सूची निदध्यान्दत्यन्ते तथोनभ्याशु निर्हरेत् ।

सूत्रस्यान्तं समानीय गाढं बन्धं समाचरेत् ।

ततः क्षारबलं वीक्ष्य सूत्रमन्यत प्रवेशयेत् ।

क्षाराक्तं मतिमान् वैद्यो यावत्रच्छिद्यते गतिः ।

भगन्दरेऽप्येष विधिः कार्योवैद्येन जानताः ।

विरेचनं चैषणपाटनं च विशुद्धमार्गस्य च तैलदाहः

स्यात् क्षारसूत्रेण सुपाचितेनच्छिन्नस्य चास्य वणवधिकित्सा ।

(च. चि. 12/97)

CHAPTER 11

APPLICATION OF KSHARA SOOTRA IN DIFFERENT CLINICAL VARIANTS OF FISTULA IN ANO.

Application of kshara sootra in multiple fistulae

The multiple fistulae are of two type

1. Those having multiple external openings but only one internal opening.
2. Multiple external openings with separate internal opening for each fistula.

In both cases, separate threads have to be applied for each tract.

In some cases multiple fistulae are just superficially connected without a deeper tract and internal opening, these fistulae may be threaded skin to skin.

Sometimes there are two or more external openings of one tract is situated in the same line at the same clock position, in such cases kshara sootra should be applied through distal most opening only and remaining openings will be taken care of by the same thread as it gradually advances by cutting through the tissue.

In other type of multiple fistulae, which have multiple external openings, multiple tracts and multiple internal openings, kshara sootra is applied considering each as a separate fistula. The kshara sootra may be applied simultaneously or one after another. But no two thread should pass through the sphincter at the same period, otherwise fibres of sphincter will contract which ultimately lead to incontinence.

Application in high Rectal fistula- It is a misnomer and represent exceptionally high anal fistula and the pelvi-rectal fistula. In both these cases primary source of infection is present on dentate line. In case of pelvi-rectal fistula, the tract often pierces through levator ani muscle and the cavity lies in the supra-levator or the pelvi-rectal space. Presence of a thread at the level of anorectal junction would effectively drain and debride the supra-levator cavity and thereby induce healing process.

If the supra-levator tract opens into ampulla of rectum above anorectal ring, normally primary source of infection is at ano-rectal ring but if the infection has traversed from the rectum above this line, it suggest some pathology in colo-rectal canal as ulcerative-colitis. Fistula heals spontaneously as the disease treated or kshara sootra application is done. but in no case rectal wall will be pierced otherwise faecal fistula will be formed.

Application in Blind Internal Fistula- As kshara sootra application requires both internal and external opening but in these type of cases there is lack of external opening. So prerequisite is to locate external opening either by assessing a moderate swelling present over peri-anal area or by retrograde probing. Then convert this incomplete fistula into complete fistula by communicating both these opening and then ligate the kshara sootra as usual.

Blind external fistula - When external tract is not located well due to development of granulation tissue in the way of internal tract. This type of fistula is treated first by kshara varti followed by kshara sootra karma.

Kshara varti is a small thin wicks of mixture of latex of *E. nerrifolia* linn., kshar of

Acyranthus aspera and powder of *Curcuma longa*.

Kshara varti is introduced into the external opening for 3 to 4 days. It helps in the debridement of all necrotic tissues and draining the tract. After draining the tract, kshara sootra is passed through the tract.

Advantages of Kshar varti – It effectively debrides all the necrotic tissues and unhealthy granulation tissues. Thus enhancing drainage of the primary tract of fistula in ano. Due to the patency of the primary tract with the use of kshar varti, the secondary ramifications are liable to complete and effective drainage.

Application in Recurrent fistula – In these cases cause of recurrence should be traced out by investigations. If no positive specific lesion is found then only application of kshara sootra is indicated.

Main problem which is to come across in managing these patient that they had operated previously for one or more time, due to which entire soft cushion of fat is changed into hard fibrous tissue and that makes application of kshara sootra and initiation of healing process difficult. But here cutting should keep pace with the healing.

Application in Tubercular fistulae – Tuberculosis is a known cause for fistula and is of two type-

- i) Primary-in this fistulae descend directly from a tubercular nidus in some structure in pelvic cavity .Kshara sootra is of no use unless primary focus is treated or destroyed.
- ii) Secondary-these fistulae are secondary to a distant tubercular focus in body.If a true distant focus is located a full course of ATT with application of kshara sootra but if no distant focus is located local instillation of Streptomycin at every dressing may serve the problem.

Application in Diabetics – Diabetes retards the healing process by providing less nourishment to the tissue and it allow the infective organism to flourish.

So blood sugar should be well under control before starting and during kshara sootra treatment.

Application in hypertensives – High blood pressure has no deleterious effect on wound healing. Anti hypertensives ,analgesic and anxiolytic should be used along with the regular treatment of kshara sootra.

Application in Cardiac patients – Anaesthesia and surgery are normally contraindicated in cases of cardio-pathology.but if necessary analgesic and anxiolytic should be given half an hour before kshara sootra karma and the procedure should be in presence of cardiologist.

Fistula associated with Piles – If a patient have internal or external pile mass associated with fistula,the pile masses should be excised before kshara sootra application in fistula.

Fistula associated with fissure abscess– If abscess can be palpated from external surface,then abscess should be incised and kshara sootra should be applied in tract. It drains abscess cavity both inside the anal region and externally in the skin. In case sentinal tag with fissure is present with fistula, the tag should be treated before the application of kshara sootra for fistula.

Horse-shoe shaped fistula– It is type of multiple fistula involving both ischio-rectal fossa.It usually have internal opening at 6 or 12 o clock position. In this type of fistulae separate thread for separate fistula are ligated with same internal openings.

Anal fistula with chronic cavity– If chronic sinus with abscess is present inside the anus

and is observed from external surface during palpation, one should incise and pass a maliable probe in the tract and kshara sootra is applied. It drains the abscess cavity inside the anorectal region and externally in the skin.

Application in neurogenic patient- In the Paraplegic and hemiplegic management of fistula in ano by kshara sootra produces no problem as they have no sensation of pain nor the external sphincter remains hypertonic or contractile any more. Only positioning of the patient for procedure and subsequently for change of kshara sootra is difficult. Management of the wound is also very troublesome in these patient because of there dependency on others.

Anal fistula with abscess and large cavity- In this abscess is incised and drained at the earliest. If fistulous tract contains a large cavity the kshara pichu is put inside the cavity. Insertion of pichu in cavity helps in proper drainage and debridement of unhealthy granulation or necrotic tissue. After debridement kshara sootra is applied easily as described earlier.



V Shaped incision



Communicated with Kshara sootra if internal opening present

CHAPTER - 12

DIAGNOSIS OF ANO RECTAL DISORDERS

The diagnosis should not be based on a spot diagnosis by shortcut history taking method but it must be based on the detail and complete history, clinical/physical examinations and supplemented by supportive investigations. In this way, triad of diagnosis includes history taking, physical examinations, supportive various investigations is of immense value in making the diagnosis of surgical lesion of Ano- rectal region. The history of a case related to anal problem was of little significance and everything depends on the physical examination, because of great accuracy in the examination of ano-rectal region, physical finding are of greater importance than symptomatology. However history taking is very important diagnostic device and an account of present complaints with duration including onset and past events including past treatment, narrated by the patients in his/her own language. The pattern of history recording should follow in sequence as under-

Subject- name, age, sex, religion, residence, occupation etc.

Chief complaints- it is recorded in chronological order of their appearance. if few complaints start simultaneously, then they are recorded according to their severity.

History of present illness- it contains from the beginning of first symptom and extends to the time of examination.

It includes mode of onset of symptoms, progress and the treatment which patient might have received.

Past history- In case of fistula in ano previous history of anal abscess or history of tuberculosis, crohn's disease, ulcerative colitis, fissure in ano may be found. Habitual constipation is often associated with fissure in ano & internal piles. Prolapse may be preceded by dysentery or severe diarrhoea or constipation.

Drug history- patient is asked about all the drug he or she was taking. Special consideration is given to steroids, insulin, antihypertensives, diuretics, ergot derivatives, MAO inhibitors and HRT etc.

History of allergy- allergy to any drug or diet should be asked and mention on the cover page of file with red ink.

Personal history- history of smoking, alcohol intake, diet, marital status and in case of females menstrual history and obstetric history

Family history- as many diseases run in a family as DM, HT, piles and fissure in ano.

History of immunization- it is necessary in case of children. as diphtheria, tetanus, tuberculosis, poliomyelitis, small pox etc

Physical examination dominates in making a rectal diagnosis because it is the great difficulty which the average patients experience, in describing rectal complaints with delicacy and precision. So it is advisable to break one of the rules of medical history taking deliberately asking leading questions regarding symptoms and their duration.

Symptoms

- | | |
|-------------|---------------------|
| i. Bleeding | ii. Prolapse |
| iii. Pain | iv. Discharge |
| v. Swelling | vi. Anal irritation |

vii.	Bowel habits	viii.	Incontinence
ix.	Abdominal pain	x.	Loss of weight
xi.	General health	xii.	Previous illness
xiii.	Previous operation		

Bleeding-

1. 3 things regarding bleeding should be asked
 - amount of bleeding
 - colour of blood loss
 - relation with faeces

Bright red blood - Coming from the rectum or anal canal

Dark red - Coming from the ascending, transverse, descending or sigmoid colon.

Black i.e. melaena - From small intestine or higher.

Relation with faeces

- i. Blood mixed with faeces means that the blood come from bowel higher than sigmoid colon.
- ii. Blood on the surface of faeces - it usually comes from the rectum or anal canal.
- iii. Blood separate from the faeces - when bleeding occurs at some other time than defecation e.g. CA rectum, diverticulosis, diverticulitis, U.C., polyp, prolapsed piles etc.
- iv. Blood in the toilet paper - in c/o minor bleeding from anal skin or fissure in ano or external haemorrhoids.

2. **Discharge of pus/mucus** : Purulent discharge coming from a sinus which soil the clothes occurs in of fistula in ano.

In ulcerative colitis - blood stained, purulent offensive discharge at the time of defecation.

Mucus discharge occurs in C/o crohn's disease and colloid CA of rectum.

3. **Pain** : All the pathological conditions below the dentate line are painful and above it are painless provided they remain confined in rectal wall. Pathology beyond this is almost always painful either above or below dentate line.

Nature of pain and its relation with defecation should be asked.

- Throbbing pain occurs in case of ano rectal abscess.
- Sharp cutting pain in anal fissure.
- Intermittent pain occurs in fistula in ano.
- Uncomplicated piles are usually painless. They become painful when get infected or strangulated.

Pain alone - After defecation- anal fissure, Spontaneously at night-proctalgia fugax,

pain with bleeding - Anal fissure, anal CA, rupture of ano rectal abscess, Thrombosed and strangulated pile.

Pain with lump - Perianal haematoma, ano rectal abscess, CA of anal canal

Pain with fistula - fistula in ano

Pain with something coming out with bleeding - Haemorrhoids, prolapse rectum, prolapsed rectal polyp.

4. **Prolapse** : Patients also complains of something coming out per anum during defecation. That may be prolapsed rectum, polypus or long standing internal piles.

If prolapse is automatically reduced or it has to be pushed in anal canal.
If prolapse is slight, it is partial prolapse or if >3.75 cm it is complete prolapse i.e. proci-
dentia.

5. **Bowel habits** – In CA rectum, the bowel habit is altered and nature of alteration depends on position of growth. Growth at pelvi-rectal junction or in sigmoid colon is usually of the annular type and increasing constipation is the earliest symptom in these cases. Feeling of incomplete evacuation with sensation of fullness in the rectum occurs in case of proliferative growth in ampulla. In ulcerative growth, mucus, pus, blood of faeces accumulate overnight during night and the patient on rising from the bed gets an urgent call to stool i.e. spurious morning diarrhoea. In case of growth in lower part of rectum and anal canal pipe stem or tape like stool occurs. Tenesmus occurs in case of proliferative growth of ampulla of rectum.
6. **Pruritis ani** – can occur due to mucus discharge from the anus due to haemorrhoids, fissure, fistula, polyps, skin tags, condyloma etc.

Implements

To conduct rectal/anal examinations simple instruments are required-

Examining table – which is usually height adjusting and have a lithotomy arrangement. Fixed table could also be used when work is to be done in Trendelberg position. Goligher recommended distance of at least 80 cms between ground and top of the table.

Lighting – a good light source should be placed behind the surgeon focusing the perianal area.

Surgical gloves – ordinary gloves could be used.

Lubricant – Any lubricant could be used to facilitate progress of index finger into the anal canal.

Probes – probes of different sizes and shape should be kept. Plastic wires and rubber catheter could also help.

Proctoscope – Appropriate size of proctoscope should be selected in each individual. Preferably proctoscope with inbuilt light source is used.

Rectal /anal speculum – it is required sometime to locate the internal opening.

Sigmoidoscope /colonoscope

Position of rectal examination

1. **Genupectoral position** (knee-shoulder position) – best position for rectal examination, but certainly inconvenient and embarrassing position especially for women.
2. **Left-lateral or Sims' position** – for this left hip should rest on small sand bag placed immediately adjacent to surgeon side of couch, his trunk should lie obliquely across couch cup and his hip should be flexed to an angle slightly greater than 90 degree.
3. **Lithotomy position** – the advantage of this position that information regarding pelvic viscera can be obtained and bi-manual examination could be performed.
4. **Knee-elbow position** – this position is particularly suitable for palpating the prostate and seminal vesicle.
5. **Supine position** – (Dorsal position) – Patient lies on his back with hips flexed...it is convenient for ill patient and to do bi-manual examination.
6. **Right lateral position** – it could be chosen in the case of carcinoma at pelvi-rectal junction.

PHYSICAL EXAMINATION-

It includes general survey, local examination, and general examination. Ashtavidha Pariksha and Dasvidha pariksha is to be accomplished to do the general assessment of disease and diseased.

Ashtavidhapariksha-

- 1) **Nadi-** PULSE (rate, rhythm, volume, pressure, character)
- 2) **Mutra-** (Macroscopic examination of urine)
Quantity of urine- increased in case of DM, diabetes inspidious. Decreased in case of renal failure or retention of urine, dehydration, fluid loss as in case of intestinal obstruction.
Color of urine- red in case of porphyria, black in case of Alkeptonuria, turbid in case of Prostatitis and albuminuria, yellow in case of jaundice. Pus in urine in case of Pyonephrosis, Blood in case of cystitis or stone .
- 3) **Mala- Faeces**
White color of stool in case of obstructed jaundice, Steatorrhoea in case of Malabsorption syndrome and pancreatitis , blood in stool due to any local ano-rectal pathology, black colour of stool-melaena due to upper GI bleed. Pipe stem stool in case of anal stricture . tooth-paste stool in case of Hirschsprung's disease.
Odour- in case of jaundice is very offensive. Stool in case of amoebic dysentery smells like semen.
- 4) **Jiwha- Tongue**
Inability to protrude tongue (ankyoglossia) in infants due to tongue tie and in elderly in case of malignancy of tongue. Fasciculation is found in tongue in case of lesion of hypoglossal nerve or its nucleus.
Large tongue (macroglossia) sound in case of Acromegaly, myxoedema, Amyloidosis.
Color- pale in severe anaemia, yellow in case of jaundice. Tip of the tongue is blue in case of central cyanosis.
Moistness of the tongue decreased in case of dehydration.
Generalised atrophy of the tongue is in Vit. B12 deficiency , iron deficiency. Two type of cystic swelling also found in tongue as Ranula, Sublingual dermoid cyst. Hairy leucoplakia in HIV, strawberry tongue in Scarlet fever.
- 5) **Shabda - Crepitus & auscultation**
Crepitus means grating & cracking sensation. It may be due to bone and joint pathology or may be due to pathology in subcutaneous tissue. Bony crepitus in fracture, in joints it is heard in case of OA and other joint pathology. In case of Surgical emphysema and gas gangrene, crackling sensation is felt by finger . Chest auscultation & Abdominal auscultation (Hyperperistalsis & absence of bowel sound)
- 6) **Drik- Eye**
Jaundice- sclera of eyeball is yellow and it is Pale in severe anaemia. Red eye is found in conjunctivitis, keratitis etc. Black eye due to trauma to eye. Unequal pupils(anisocoria) in Horner's syndrome .
- 7) **Sparsa-** Touch of the patient is felt moist in case of hypothyroidism and dry in dehydration. Skin of the patient is thickened , greasy and loose in Acromegaly
- 8) **Aakriti- Built and Attitude**
Nutritional status
Attitude – Posture
Decubitus – Position in bed

Atura Bala Pramana(das-vidha Pariksha)

1. Prakriti -
Manas- satvik /Rajas /Tamas
Sharirik- V / P /K /VP /KV /PK/ Tridosaja
2. Vikriti- Lakshana nimmita/ Lakshya nimmita /Nimmit anurupa
3. Saar- Twak / rakta /mamsa /meda /asthi /majja /meda /satva
4. Samhanan- susamhanan / madhyama / heen
5. Pramana-
6. Saatmya- Ekrasa /madhyarasa/ Sarvarasa /Sheeta / Usna
7. Satva- Pravara / Madhyam /Avar
8. Aahar Shakti -
Abhyaran Shakti- Pravara / Madhyam / Heen
Jaaran Shakti- Pravara / Madhyam / Heen
9. Vyayam Shakti- Pravara / Madhyam / Heen
10. Vaya-Bal /Madhyam / Vridha

General examination- Head to toe examination is done under this heading-

Head and Neck- Eyes, mouth ,pharynx, movement of neck, neck-veins, lymph node, carotid pulse, cranial nerve examination is done.

Upper limb- General examination of the arms and hand with particular reference to vascular supply and nerve supply is done. Power,tone, reflexes and sensations is done. Lymph node and finger nails for clubbing and cyanosis are examined.

Thorax - Shape and size of chest , presence of any dilated vessels and pulsation, position of trachea, apex beat, lung and heart (inspection, palpation, percussion, auscultation)

Abdomen-Abdominal wall (scars,dilated vessels,position of umbilicus),abdominal reflexes,visible peristalsis), palpation, percussion,auscultation,hernial orificies, genitalia ,inguinal glands.

Lower limb- General examination of leg and feet(vascular supply, nerve supply), varicose veins, oedema,joints.

Examination of External Genitalia - for STDs and tumors.

Local Examination-

Inspection : It is the most important part of examination. Some ano-rectal diseases can be diagnosed by inspection only as pilo-nidal sinus,condyloma ,anal CA,fistula in ano,sentinal pile, anal tags etc.

Palpation : it should be perform before DRE.

As a tender and indurated swelling with brawny edema on one side is due to ischio-rectal abscess.

Palpation of the perianal region- done with unlubricated finger. Any suspected abscess or haematoma should be palpated for tenderness. In case of any external opening distance from that to anus is palpated for any kind of induration of fistulous tract.

Palpation of anal canal and rectum-

Digital rectal examination-for this patient is told about position and proce

and instructed to breathe in and out with mouth open. Pulp of gloved and lubricated finger should be placed flat on anal verge and gentle pressure is exerted till the sphincter yields. More pressure will gradually push the finger into anal canal with rotatory movement. Note tone of sphincter, any pain tenderness and any thickening of the wall of anal canal. When finger enters into rectum, it should be pushed as high as possible and examination can be divided into

- a. With in the lumen
 - b. In the wall
 - c. Outside the wall
- a. With in the lumen - Hard stool, apex of intussusception may be occasionally be felt. In intestinal obstruction there is ballooning of the rectum. if a mass can be felt ask the patient to strain down.
 - b. In the Wall- Just inside the opening of the anus a circular groove between external and internal sphincteric muscle can be felt. Between these internal opening of fistula in ano is usually felt. 3 cms from the anal verge, ano-rectal ring could be felt. Position of different abscess and fistula could be determined with this. Above this the finger enters into rectum and valve of Houston is felt. Chronically inflamed and thrombosed pile mass could also be felt but uncomplicated pile mass can only be diagnosed by proctoscopy. Ulcer is diagnosed as loss of normal smoothness. Polypus of rectum could be felt as a soft round growth slipping under finger. Any narrowing of the lumen could be felt and is sign of stricture. Carcinoma of rectum usually occur in lower part of ampulla where they tend to be papilliferous or ulcerative with everted edge. Some occur in upper part of rectum and are annular type.
 - c. Outside the wall- In the anterior rectal wall in case of men, prostate and seminal vesicle are easily felt. In females, cervix and retroverted body of uterus is often palpated. Through the rectal wall in the recto-vesical or recto-uterine pouch other structure such as tumour of upper rectum and pelvic colon, hard faecal mass etc can be palpated. Posteriorly sacrum and coccyx should be palpated for any condylomata and sacrococcygeal teratoma and post anal dermoid. Laterally both ischio-rectal fossa, lateral wall of pelvis, lower end of the ureters, internal iliac arteries. Pelvic appendix could also be felt on right side.

Examination of the examining finger on withdrawal- if blood, mucous or pus is observed, it suggests presence of any ulcer, growth or colitis.

A vaginal examination is often required to supplement rectal palpation as in case of recto-vaginal fistula and in local spread of carcinoma in posterior vaginal wall.

Bi- digital examination- in case of perianal abscess and ischio-rectal abscess swelling is tender and indurated and is better felt by bi-digital examination. For this tip of index finger is inserted into anal canal and thumb is put out side the anal verge to feel the extent of swelling, cord of the fistulous tract.it gives better assessment.

Special Investigations-

Routine blood investigations- Hb, TLC, DLC, ESR, BT,CT, FBS, B.Urea

Proctoscopy- Visual examination of the lower part of rectum and anal canal through proctoscope is done. A lubricated proctoscope is inserted into the anal canal in upwards and forwards direction towards the umbilicus of the patient and then backwards along the hollow of sacrum in rectum . Patient is asked to breathe in and out. Obturator is taken out when it is fully introduced. Inside of the proctoscope should be well illuminated. Firstly ,the mucous membrane of the rectum is examined for any kind of inflammation ,ulceration or new growth. Now proctoscope is slightly withdrawn and anal mucosa will be seen as protruding through proctoscope. Now number and position of internal haemorrhoids should be looked for.



Sigmoidoscopy-it is about 14 inches in length and used to see inside of the lower part of pelvic colon and whole of rectum. A well lubricated sigmoidoscope is inserted into anal canal . After ano-rectal junction is reached, further advancement should be done under direct supervision. Obturator is withdrawn and carrier of light and bellows are fitted. Further horizontal force is encountered in rectum and then pushed along the sacral curve. When half of the rectum is crossed,it is pushed slightly anteriorly to reach upper part of rectum. Further, sigmoidoscope is inserted under direct supervision and with gentle inflation of bowel.

Any growth in lumen, mucosa of rectum, ulcers can be seen. Biopsy can also be taken with the help of long forceps.



Sigmoidoscope

Ano rectal manometry- it measures the resting anal pressure generated by the sphincter complex of anus. It can define hypo or hyper functional disorders of the sphincter complex. This test measures the pressures of the anal sphincter muscles, the sensation in the rectum, and the neural reflexes that are needed for normal bowel movements. Normal resting pressure ranges from 40 -80 cm H₂O, whereas squeeze pressure ranges from 80 to 160 cm H₂O.

Indication-

- Faecal incontinence
- Constipation
- Pre/post surgical evaluation
- Functional ano-rectal pain
- Pelvic floor dyssynergia
- Hirschsprungs' disease

Anal Sphincter EMG – Anal sphincter electromyography (EMG) is recorded with a small plug electrode placed in the anal canal. The patient then is asked to relax, squeeze and push at different times. The anal sphincter muscle electrical activity is recorded and displayed on a computer screen. Anal sphincter EMG confirms the proper muscle contractions during squeezing and muscle relaxation during pushing. In people who paradoxically contract the sphincter and pelvic floor muscles, the tracing of electrical activity increases, instead of decreasing, during bearing down to simulate a bowel movement (defecation).

Normal anal EMG activity with low anal squeeze pressures on manometry may indicate a torn sphincter muscle that could be repaired.

Endo Anal Ultrasonography - it is a safe, well tolerated, easy to perform procedure which provide best visualization of anal musculature and perianal structures. The anal structures appear as concentric rings. Internal anal sphincter appears as dark ring and external sphincter as mixed echogenic or gray ring. Puborectalis muscle appears as external sphincter but is "U" shaped because it has no anterior component.

Defects in the sphincter muscles are recognised by breaks in the muscular rings. Anal masses could also be identified readily as cyst, lymph node, abscess.

Balloon Expulsion Test- For this procedure, a small balloon is inserted into the rectum and then inflated with water. The patient goes to the bathroom and tries to defecate (expel) the small balloon from the rectum.

The amount of time it takes to expel the balloon is recorded. Prolonged balloon expulsion suggests a dysfunction in the ano rectal area.

Defecography- It is important in evaluation of chronic constipation and measures individual's ability to evacuate radiographically and presence or absence of a rectocele or internal intussusception.

Radiological Investigations -

1. Straight x-ray of the abdomen-to see the signs of intestinal obstruction due to annular growth at recto-sigmoid junction.

2. Chest x-ray-to exclude pulmonary metastasis in case of rectal CA.
 3. Barium enema x-ray-in case of any internal haemorrhoids, barium enema must be performed to exclude Rectal CA as a cause of bleeding per anum. It also reveals rectal polyp, ulcerative colitis and crohn's disease.
Through Double contrast barium enema rectal and colonic pathologies could be detected easily than barium enema x-ray.
 4. CT Scan and Ultrasonography- to see the metastasis in nearby viscera in case of rectal CA and pelvic and intra abdominal lymph nodes.
 5. MRI and fistulogram- To defined presence and cause of any secondary track.
- Other investigations-

1. Examination of stool-
Naked eye examination- for presence of mucus, blood etc.
Occult blood examination-in case of carcinoma intestine.
Bacteriological and ova cyst- in dysentery.
2. Bacteriological examination of pus or tissue from infected wound
3. Cytological examination-colonic lavage is done with normal saline through sigmoidoscope. Evacuated fluid is sent for cytological examination.
4. Blood Wassermann reaction-In case of suspected syphilitic lesion.
5. Frei's test-0.1 ml of sterile pus obtained from unruptured bubo of a patient is injected intradermally.if red papule of atleast 6 mm appear in 48 hours then the test is positive for Lymphogranuloma inguinale.
6. Compliment fixation test – for lymphogranuloma venereum



RECTAL PROLAPSE



ACUTE FISSURE IN ANO



INTERNO-EXTERNAL HAEMORRHOIDS



THROMBOSED PILE MASS



FISTULA IN ANO WITH MULTIPLE OPENINGS

Case Record Form

DEMOGRAPHIC DATA

Name of the patient
Parentage
OPD/IPD no.
Address
Occupation

Age/Sex
Marital Status
Religion
Educational status
Monthly income

HISTORY

Chief complaints with duration:-

History of present illness:-

History of past illness:-

Medical history:-

Family history:- father mother husband/wife
 Brother sister son/ daughter

Personal history :-

RESIDENCE	Rural	Urban	
HYGIENE	Satisfactory	Unsatisfactory	
PROFESSION	Farmer	labourer	others
ADDICTION	tea/coffee	smoking /	alcohol/Tobacco
DIETARY HABITS	vegetarian	Non-vegetarian	
ECONOMIC STATUS	well to do	middle class	poor
SOURCE OF WATER	tap	Bawn	Well
LIFE STYLE	Active	Sedentry	
APPETITE	Normal	Increased	Decrease
THIRST	Normal	Increased	Decrease
SLEEP	Normal	Regular	Irregular
BOWEL HABIT	Normal	constipation	Loose stool

GYANECOLOGICAL HISTORY:-

Age of menarche

Cycles/days

Duration of flow

Age of menopause

Any other finding

GENERAL PHYSICAL EXAMINATION:-

ASHTA VIDHA PARIKSHA-

1. Akriti-

General appearance

Built

Facial Expression

Obesity
Abnormal facial characters
Oedema
Wasting

2. Jivha-

Macroglossia/ microglossia/ normal size
Coated/ not coated
Any discoloration
Moist/ Dry
Any swelling

3. Netra-

Pallor/ icterus
Any discoloration of eye

4. Nadi-

Rate-
Rhythm-
Volume-
Character-
Regularity-

5. Sparsh-

Temperature-
Dry /moist-
Rashes-
Lymph nodes-

6. Shabda-

Any bony crepitus/ crepitus in subcutaneous tissue
Any gurgling sound
Any breathing sound

7. Faeces-

color of stool-
Frequency of stool-
Odour of stool-

8. Urine -

Quantity of urine in 24 hrs-
Color of urine-
Odour of urine-

Atura Bala Pramana(das-vidha Pariksha)

1. Prakriti -

Manas- satvik /Rajas /Tamas
Sharirik- V / P /K /VP /KV /PK/ Tridosaja

2. Vikriti- Lakshana nimmita/ Lakshya nimmita /Nimmit anurupa

3. Saar- Twak / rakta /mamsa /meda /asthi /majja /meda /satva

4. Samhanan- susamhanan / madhyama / heen
5. Pramana-
6. Saatmya- Ekraśa /madhyarasa/ Sarvarasa /Sheeta / Usna
7. Satva- Pravara / Madhyam /Avar
8. Aahar Shakti –

Abhyaran Shakti- Pravara / Madhyam / Heen

Jaaran Shakti- Pravara / Madhyam / Heen

VITALS-

BP-

PR-

RR-

TEMPERATURE-

Systemic Examination

Respiratory system Examination

- a. Cough - Dry/ Productive
Worst at day/ Night
- b. Sputum
 - i. Quantity - Mild/ Moderate/ Abundant
 - ii. Colour -
 - iii. Odour -
 - iv. Blood stained - Yes/ No
 - v. Blood clots - Yes/ No
- c. Breathing
 - i. Dyspnoea - Occurs at rest/ walking/ running/ climbing
- d. Chest pain
 - i. Character -
 - ii. Aggravated by - Deep breathing/ Coughing/ Exercise

Inspection

- a. Form of chest
 - i. Bilaterally symmetrical- Yes/ No
 - ii. Kyphosis - Yes/ No
 - iii. Lordosis - Yes/ No
 - iv. Scoliosis - Yes/ No
- b. Movement of chest
 - i. Respiration - Normal/ Decreased/ Increased
 - ii. Type of breathing -

Palpation

- a. Position of trachea
- b. Vocal fremitus - Increased/ Decreased

Percussion

- a. Character - Yes/ No
- b. Sound - Resonant/ Dull
- c. Bell sound -

d. Coin sound -

Auscultation

- a. Type of breathing - Bronchial/ Vesicular/ Broncho vesicular
- b. Added sound - Ronchi/ Crepitation
- c. Type of crepitation - Coarse/Fine
- d. Friction sound - Yes/ No

Digestive system-

Inspection-

- i. Contour-
 - a. Anterio-posterior-
 - b. Transverse-
- ii. any swelling/ bulging-
- iii. Umbilicus-
- iv. any visible veins-
- v. peristaltic veins-
- vi. any scar marks-
- vii. Movement of abdominal wall-

Palpation-

- i. Temperature-
- ii. Site of tenderness-
- iii. Hyperesthesia- present/ absent
- iv. Muscle rigidity-
- v. Rebound tenderness-
- vi. If swelling present-
 - Size/shape-
 - Consistency-
 - Relationship with underlying structure- fixed/ mobile
- vii. Organo-megaly- liver/ spleen/rt. Kidney/ lt.kidney
 - Tenderness-yes /no
 - Consistency-soft/ firm/hard
 - Surface-smooth/nodular

Auscultation-

- Bowel sound - normal/ sluggish /absent
- Arterial bruits - present /absent

Nervous System Examination -

- i. Intellectual & Mental functions
 - a. Appearance &behaviour-
 - b. Emotional state-
 - c. Orientation-
 - d. Memory- (recent and remote)-

- e. Consciousness-
- f. General intelligence-
- g. Cognitive power-
- ii. Speech
 - a. Aphasia- yes/no
 - b. Dysarthria-yes/no
 - c. Stammering/ stuttering-yes/no
 - d. Lalling or baby speech-yes/no
- iii. Cranial Nerve
 - a. 1st Cranial nerve- smell-
 - b. 2nd Cranial nerve-
 - Visual acuity -
 - Field of vision-
 - Colour vision-
 - Fundus-
 - c. 3rd 4th 5th Cranial nerve-
 - Movement of eye ball-
 - Squint -yes/no
 - Nystagmus- yes/no
 - Diplopia-yes/no
 - Pupils-
 - Size-
 - Shape-
 - Reaction to light-
 - Reaction to accommodation-
 - d. 6th Cranial nerve-
 - e. 7th Cranial nerve-
 - f. 8th Cranial nerve-
 - Acuity of hearing -
 - Rinnes's test -
 - Weber's test -
 - Vertigo -
 - g. 9th Cranial nerve-Gag reflex-
 - h. 10th Cranial nerve-
 - Arching of palate-
 - vocal cords-
 - Swallowing-
 - i. 11th Cranial nerve-
 - Sternomastoid-
 - Trapezius-
 - j. 12th Cranial nerve-
 - Tongue-
 - Protrusion-
- Deviation-

Atrophy-				
Fasciculations-				
Limbs -				
Motar System -	R.A.	L.A.	R.L.	L.L.
Bulk-				
Tone -				
Power-				
Nutrition -				
Co-ordination-				

Sensory System-

- Touch -
- Pain -
- Temperature -
- Vibration sense -
- Sense of position -
- And movement -

Reflexes

- A. Superficial reflexes-
 - Conjunctival -
 - Corneal -
 - Upper Abdominal -
 - Lower Abdominal -
 - Cremasteric -
 - Plantar -
- B. Deep reflexes-
 - Jaw reflex -
 - Biceps -
 - Triceps -
 - Radial -
 - Knee -
 - Ankle -
- C. Organic Reflexes-
 - Deglutition -
 - Defaecation -
 - Micturation -
 - Clonus -
 - Involuntary movements -
 - Tremors- fine / coarse
 - Chorea -
 - Athetosis -
 - Fasciculations/twitches-
 - Convulsive movements -

Type of Gait-

Locomotor System -

Inspection -

Deformity -

Inflammation- yes / no

Swelling- yes /no

Palpation -

Warmth- yes / no

Tenderness- grade-

Movements -

Flexion- yes /no

Extension- yes /no

Abduction- yes/no

Adduction- yes /no

Abduction- yes /no

Rotation- yes /no

Cardio-Vascular System -

Inspection and Palpation-

Cyanosis - yes /no

Oedema - yes /no

J.V.P. - raised /not raised

Venous engorgement- yes /no

Radial pulses- Rate-

Rhythm-

Volume -

Character-

Cardiac impulses -

Apex beat -

Thrills -

Character-

Auscultation -

Heart sounds-

Mitral area-

Tricuspid area-

Aortic area-

Pulmonary area-

Percussion-

Local Examination :-

Vrana Akriti

1. *Site of wound*- upper limb / lower limb /trunk /face / neck
Size of wound- cm length×cm width ×....cm depth
Shape of wound - a. Oval b.Round c.Irregular d.Other
Edge - sloping edge /Rolled edge /Punched out/ Undermined edge /Raised and pearly white beaded .
Margins - Attached / Not attached
Base-
 - Induration absent-
 - Slight induration-
 - Moderate induration-
 - Marked induration-*Relationship with deeper structure*-
 - Fixed
 - Mobile*Surrounding skin*-
 - Healthy/dry /excoriated /erythematous/oedematous/macerated*Surrounding lymph nodes*-
 - Palpable /not palpable

2. Vrana Varna :

- Floor* -
 - Healthy granulation tissue-
 - Unhealthy granulation tissue-
 - Slough -
 - Necrotic tissue-

3. Vrana Srava -

- Type*- None /Serous/Sero-sanguinous/Bloody/ Purulent
Amount of discharge - Scanty /Low /Moderate /High

4. Vrana Gandha -

- Odour* - None /Malodour

5. Vrana Vedna-

- Mild/ moderate /severe

PROVISIONAL DIAGNOSIS-

SUPPORTIVE INVESTIGATIONS:

DIAGNOSIS-

TREATMENT-

CASE RECORD FORM

DEMOGRAPHIC DATA

Name of the patient
Parentage
OPD/IPD no.
Address
Occupation

Age/Sex
Marital Status
Religion
Educational status
Monthly income

HISTORY

Chief complaints with duration:-
History of present illness:-
History of past illness:-

Anorectal Symptoms

- 1) **Bleeding per anum** - Yes / No
Quantity - Mild (2 to 5 drops / 24 hr)
Moderate (6 to 10 drops / 24 hr)
Severe (>12 drops / 24 hr)
Colour - Bright Red / Red / Dark red
Relation with faeces - Blood mixed with faeces
On the surface of faeces
Seperate from faeces
Character - In drops / In stream / Like splash in the pan
Time - Before / During / after defecation
- 2) **Prolapse** - Yes / No
 - a) No. Of prolapse mass -
 - b) Reduce automatically after defecation
Reduce manually after defecation
Remain prolapsed
- 3) **Discharge per rectum** - Yes / No
Bloody/Purulent/ Mucoid/Mucopurulent
- 4) **Pain** - Yes / No
 - a) Nature -Throbbing/ Sharp cutting / Intermittent
 - b) Duration - During / After / Both during & after defecation
- 5) **Abnormality of Bowel habit** - Yes / No
 - a) Increasing constipation
 - b) Chronic constipation
 - c) Diarrhoea
 - d) Alternate constipation & diarrhoea
 - e) Spurious morning diarrhoea
 - f) Tenesmus
- 6) **Chronicity of anorectal symptom**
 - a) Below 1 year

- b) 1 to 5 years
 c) 5 to 10 years
 d) More than 10 years
- 7) **Heavyness in anorectal region** - Yes / No
 8) **Pruritus ani** - Yes / No
 9) **Burning sensation** - Yes / No
 10) **Loss of weight** - Yes / No

Medical history:-

Family history:-

father	mother	husband/wife
Brother	sister	son/ daughter

Personal history :-

RESIDENCE	Rural	Urban	
HYGIENE	Satisfactory	Unsatisfactory	
PROFESSION	Farmer	labourer	others
ADDICTION	tea/coffee	smoking /	alcohol/Tobacco
DIETARY HABITS	vegetarian	Non-vegetarian	
ECONOMIC STATUS	well to do	middle class	poor
SOURCE OF WATER	tap	Bawn	Well
LIFE STYLE	Active	Sedentry	
APPETITE	Normal	Increased	Decrease
THIRST	Normal	Increased	Decrease
SLEEP	Normal	Regular	Irregular
BOWEL HABIT	Normal	constipation	Loose stool

GYANECOLOGICAL HISTORY:-

Age of menarche
 Cycles/days
 Duration of flow
 Age of menopause
 Any other finding

GENERAL PHYSICAL EXAMINATION:-

ASHTA VIDHA PARIKSHA-

1. Akriti-

General appearance
 Built
 Facial Expression
 Obesity
 Abnormal facial characters
 Oedema
 Wasting

2. Jivha-

Macroglossia/ microglossia/ normal size

3. Netra-
Coated/ not coated
Any discoloration
Moist/ Dry
Any swelling
4. Nadi-
Pallor/ icterus
Any discoloration of eye
Rate-
Rhythm-
Volume-
Character-
Regularity-
5. Sparsh-
Temperature-
Dry /moist-
Rashes-
Lymph nodes-
6. Shabda-
Any bony crepitus/ crepitus in subcutaneous tissue
Any gurgling sound
Any breathing sound
7. Faeces-
color of stool-
Frequency of stool-
Odour of stool-
8. Urine -
Quantity of urine in 24 hrs-
Color of urine-
Odour of urine-

Atura Bala Pramana(das-vidha Pariksha)

1. Prakriti -
Manas- satvik /Rajas /Tamas
Sharirik- V / P /K /VP /KV /PK/ Tridosaja
2. Vikriti- Lakshana nimmita/ Lakshya nimmita /Nimmit anurupa
3. Saar- Twak / rakta /mamsa /meda /asthi /majja /meda /satva
4. Samhanan- susamhanan / madhyama / heen
5. Pramana-
6. Saatmya- Ekrasa /madhyarasa/ Sarvarasa /Sheeta / Usna
7. Satva- Pravara / Madhyam /Avar
8. Aahar Shakti -
Abhyaran Shakti- Pravara / Madhyam / Heen

VITALS-

BP-

RR-

PR-

TEMPERATURE-

Systemic Examination

Respiratory system Examination

a.	Cough	-	Dry/ Productive Worst at day/ Night
b.	Sputum		
i.	Quantity	-	Mild/ Moderate/ Abundant
ii.	Colour	-	
iii.	Odour	-	
iv.	Blood stained	-	Yes/ No
v.	Blood clots	-	Yes/ No
c.	Breathing		
i.	Dyspnoea	-	Occurs at rest/ walking/ running/ climbing
d.	Chest pain		
i.	Character	-	
ii.	Aggravated by	-	Deep breathing/ Coughing/ Exercise

Inspection

a.	Form of chest		
i.	Bilaterally symmetrical-		Yes/ No
ii.	Kyphosis	-	Yes/ No
iii.	Lordosis	-	Yes/ No
iv.	Scoliosis	-	Yes/ No
b.	Movement of chest		
i.	Respiration	-	Normal/ Decreased/ Increased
ii.	Type of breathing	-	

Palpation

a.	Position of trachea		
b.	Vocal fremitus	-	Increased/ Decreased

Percussion

a.	Character	-	Yes/ No
b.	Sound	-	Resonant/ Dull
c.	Bell sound	-	
d.	Coin sound	-	

Auscultation

a.	Type of breathing	-	Bronchial/ Vesicular/ Broncho vesicular
b.	Added sound	-	Ronchi/ Crepitation
c.	Type of crepitation	-	Coarse/Fine

d. Friction sound - Yes/ No

Digestive system-

Inspection-

- i. Contour-
 - a. Anterio-posterior-
 - b. Transverse-
- ii. any swelling/ buldging-
- iii. Umbilicus-
- iv. any visible veins-
- v. peristaltic veins-
- vi. any scar marks-
- vii. Movement of abdominal wall-

Palpation-

- i. Temperature-
- ii. Site of tenderness-
- iii. Hyperesthesia- present/ absent
- iv. Muscle rigidity-
- v. Rebound tenderness-
- vi. If swelling present-
Size/shape-
Consistency-
Relationship with underlying structure- fixed/ mobile
- vii. Organo-megaly- liver/ spleen/rt. Kidney/ lt.kidney
Tenderness-yes /no
Consistency-soft/ firm/hard
Surface-smooth/nodular

Auscultation-

Bowel sound - normal/ sluggish /absent
Arterial bruits - present /absent

Nervous System Examination -

- i. Intellectual & Mental functions
 - a. Appearance &behaviour-
 - b. Emotional state-
 - c. Orientation-
 - d. Memory- (recent and remote)-
 - e. Consciousness-
 - f. General intelligence-
 - g. Cognitive power-
- ii. Speech
 - a. Aphasia- yes/no

- b. Dysarthria-yes/no
- c. Stammering/ stuttering-yes/no
- d. Lalling or baby speech-yes/no
- iii. Cranial Nerve
 - a. 1st Cranial nerve- smell-
 - b. 2nd Cranial nerve-
 - Visual acuity -
 - Field of vision-
 - Colour vision-
 - Fundus-
 - c. 3rd 4th 5th Cranial nerve-
 - Movement of eye ball-
 - Squint -yes/no
 - Nystagmus- yes/no
 - Diplopia-yes/no
 - Pupils-
 - Size-
 - Shape-
 - Reaction to light-
 - Reaction to accommodation-
 - d. 6th Cranial nerve-
 - e. 7th Cranial nerve-
 - f. 8th Cranial nerve-
 - Acuity of hearing -
 - Rinnes's test -
 - Weber's test -
 - Vertigo -
 - g. 9th Cranial nerve-Gag reflex-
 - h. 10th Cranial nerve-
 - Arching of palate-
 - vocal cords-
 - Swallowing-
 - i. 11th Cranial nerve-
 - Sternomastoid-
 - Trapezius-
 - j. 12th Cranial nerve-
 - Tongue-
 - Protrusion-

Deviation-
 Atrophy-
 Fasciculations-
 Limbs -

	R.A.	L.A.	R.L.	L.L.
Motar System –				
Bulk–				
Tone –				
Power–				
Nutrition –				
Co-ordination–				

Sensory System-

- Touch –
- Pain –
- Temperature –
- Vibration sense –
- Sense of position –
- And movement –

Reflexes

A. Superficial reflexes-

- Conjunctival –
- Corneal –
- Upper Abdominal –
- Lower Abdominal –
- Cremaseteric –
- Plantar –

B. Deep reflexes-

- Jaw reflex –
- Bicep's –
- Triceps –
- Radial –
- Knee –
- Ankle –

C. Organic Reflexes-

- Deglutition –
- Defaecation –
- Micturation –
- Clonus –
- Involuntary movements –
 - Tremors- fine / coarse
 - Chorea –
 - Athetosis –
 - Fasiculations/twitches–
 - Convulsive movements –
- Type of Gait-

Locomotor System -

Inspection -

Deformity -

Inflammation- yes / no

Swelling- yes /no

Palpation -

Warmth- yes / no

Tenderness- grade-

Movements -

Flexion- yes /no

Extension- yes /no

Abduction- yes/no

Adduction- yes /no

Abduction- yes /no

Rotation- yes /no

Cardio-Vascular System -

Inspection and Palpation-

Cyanosis - yes /no

Oedema - yes /no

J.V.P. - raised /not raised

Venous engorgement- yes /no

Radial pulses- Rate-

Rhythm-

Volume -

Character-

Cardiac impulses -

Apex beat -

Thrills -

Character-

Auscultation -

Heart sounds-

Mitral area-

Tricuspid area-

Aortic area-

Pulmonary area-

Percussion-

LOCAL EXAMINATION
RECTAL EXAMINATION

(Sthanika pariksha)

- 1) Position of patient - Left lateral /Dorsal /Knee elbow /Lithotomy / Right Lateral

- 2) Inspection (Darshan pariksha)
 - a) Colour of anal skin - Yes / No
 - b) Anal tag - Yes / No
 - c) External haemorrhoid (Circumferential mass covered by skin)- Yes / No
 - d) Prolapse of Internal haemorrhoid - Yes / No
 - e) Internoexternal haemorrhoid - Yes / No
 - f) Extrusion of haemorrhoidal mass only by straining in squatting position-Yes/ No
 - g) Itching marks - Yes / No
 - h) Any external fistulous opening - Yes / No

- 3) Palpation & Digital examination (Sparshan pariksha)
 - a) Sphincter tone - Normal/Decreased(Relax) /Increased (Spasmodic)
 - b) Tenderness - Yes / No
 - c) Site of tenderness -
 - d) Consistency of rectal mucosa - Smooth / Irregular
 - e) Any growth or swelling in anal canal/ rectum
 - f) Nature of swelling - Hard/Soft/Ulcerative/Proliferative
 - g) Staining of examining finger by - Blood /Mucous/Faeces/Pus/None

- 4) Proctoscopy & Sigmoidoscopy
 - a) Colour of rectal mucosa - Pale/Pink/Hypaemic
 - b) Haemorrhoidal mass

Position	Primary			Secondary
	3'o clock	7'o clock	11'o clock	
Colour				
Active bleeding				
Degree				
Thrombosed				
Strangulated				

c) Any polyp / Papilla

Provisional Diagnosis -

Pathological Examination -
1) Haematology

- Hb gm%
TLC /cm3
DLC P ___% L ___% M ___% E ___% B ___%
BT
CT
ESR
FBS
PFB
HIV Status

2) Biochemistry - B. Urea mg%
LFT

3) Urine - Routine
Microscopic

- 4) Radiological - Chest X ray (PA view)
- 5) ECG
- 6) Sigmoidoscopy (If necessary)
- 7) Colonoscopy (If necessary)

DIAGNOSIS -

TREATMENT -

Index

A		F	
Abscess	103	Fibrin glue	154
Agranuloytic angina	90	Fistula-in-ano-associated with fissure abscess	162
Altemeir perineal rectosigmoidectomy	81	-Associated with piles	162
Anal encirclement	80	-Types	140
Anal epithelioma	54	Fistulectomy	152
Anal fistula plug	157	Fistulotomy	153
Anal sphincter	36	G	
Anal sphincter EMG	171	Gabriel's operation	100
Anatomy of Guda	35	Gastro-colic reflex	42
Anorectal Abscess	105,107	Ghrista vrana	109
Anorectal fistula	140	Glyceryl trinitrite	94
Ano-rectal manometry	171	Goodsall's rule	144
Ano-rectal ring	36	Guda	32
Apolinose	149	Guda bhramsa	67
Arka haridra kshara sootra	27	Gudostha	33
Arsha	50	Guda vidradhi	105
Asthi of Guda	33	Guggulu based Apamarga Haridra	
Autolytic debridement	114	Kshara sootra	25
B		H	
Balloon expulsion test	171	Haemorrhoids	50,51
Bascom technique	130	Haemorrhoidal block	73
Bhinna vrana	108	Haridra Powder	14
Biological debridement	114	High Anal Fistula	140
Botulinum neurotoxin	94	Hilton's method	104
C		Houston's valve	37
Chancroid	90	Hyperbaric oxygen	94
Changeri ghrita	72	Hypertrophied papilla	87
Chinna vrana	108	I	
Coccydynia	89	Infected wound	110
Cold abscess	104	Internal sphincter	36
Condyloma acuminatum	54	Inter sphincteric space	40
Condyloma latum	54	Internal sphincterotomy	100,101
Cryosurgery	101	Ischiorectal abscess	
Cystic fibrosis	70	Ischiorectal space	
D		J	
Debridement	113	Japanese Kshara Sootra	28
Defecation mechanism	41	K	
Defecography	171	Karydakis procedure	131
Delorme procedure	80	Kshara	2
Denonvillier's fascia	38	Kshara sootra	12
Dhamni of Guda	33	Kshara sootra cabinate	15
Dusta vrana	111	Kshara sootra in blind external fistula	161
E		Kshara sootra in blind internal fistula	
Ectropion	89	Kshara sootra in diabetics	
Endo-anal USG	171	Kshara sootra in high rectal fistula	
Endopelvic fascia	38		
Enzymatic debridement	114		
External sphincter	36		

Kshara sootra in hypertension	162	"	Resection rectopexy	79
Kshara sootra in multiple fistula	161	"	Retrorectal space	40
Kshara sootra in recurrent fistula	162	"	Rhomboid flap	130
Kshara sootra in tubercular fistula	162	"	Rubber band ligation	56
Kshataja vrana	108	"	Ruhyamana vrana	111
Kutaja Kshara Sootra	25	"	S	
L		"	Samvarni	32
Liberal incision	104	"	Samyaka rudha vrana	111
LIFT technique	155	"	Sclerotherapy in piles	59
Long acting L.A.	94	"	Sclerotherapy in rectal prolapse	72
Lord's procedure	57,99	"	Sentinal tag	87
Low anal fistula	140	"	Seton	146
M		"	Sira of guda	33
Marsupilization	130	"	Snayu of guda	33
Marlex rectopexy	78	"	Snuhi latex	15
Mechanism of action of kshara	18	"	Strapping	72
Mucosal advancement flap	159	"	Sub cutaneous fistula	140
Mushak taila	72	"	Submucus abscess	105
N		"	Submucus fistula	140
Nadi	120	"	Submucus space	40
Nitroglycerine	94	"	Sudha vrana	110
O		"	Surgical debridement	113
Open posterior internal sphincterotomy	100	"	Suture rectopexy	79
Orthocolic reflex	42	"	Sweat chloride test	71
P		"	T	
Palash kshara sootra	27	"	Teekshna kshara sootra	26
Parikartika	85	"	Thiersch's grafting	134
Pelvic floor	38	"	Thiersch's procedure	80
Pelvi rectal abscess	106	"	Transcutaneous pudendal nerve block	73
Pelvi rectal space	40	"	Triangle of exposure	62
Perianal abscess	105	"	V	
Perianal space	40	"	VAAFT Technique	156
Petry dish	16	"	Viddha vrana	108
Pichhita vrana	108	"	Visarjani	32
Piles	51	"	Vrana -types	108,110
Pilonidal sinus	120	"	Vrana upkrama	114
Post anal space	40	"	W	
Pravihini	32	"	Waldeyer's fascia	37
Proctalgia fugax	89	"	Wells operation	79
Pyaemic abscess	104	"	Wound assessment criteria	195
Pylephlebitis	54	"	Wound -classification	109,110
Pyogenic abscess	103	"	Wound healing	111
R		"	Z	
Radio frequency ablation of fistula	156	"	Z- plasty	134
Raskamdhenu kshara sootra	29			
Recamier's technique	45			
Rectal polyp	45			
Rectal prolapse	67			

About The Author

Author of the book Prof. Ramesh Chand Arya has done his graduation from M.D. University, Rohtak (Haryana) & P.G in Shalya Tantra from Gujarat Ayurvedic University, Jamnagar. He has also done Ph.D in Shalya Tantra from Rajasthan University, Jaipur.

At present he is working as Professor cum H.O.D. of P.G Deptt of Shalya Tantra in R.G.G.P.G. Ayurvedic College Paprola (H.P.)- & indulge in teaching Shalya Tantra to students of both U.G. & P.G. from last 20 years.

All right reserved. No part of this publication in general and the diagrams in particular may be reproduced or transmitted in any form or by any means without the prior written permission of writer.

₹ 415/-

Printed at : Kanwar Printer's BJN 9805875835